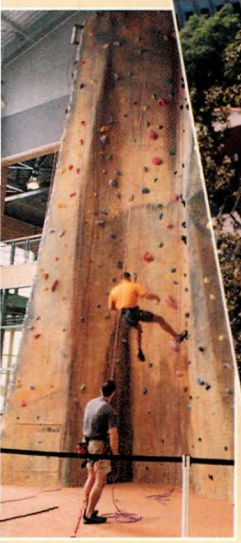
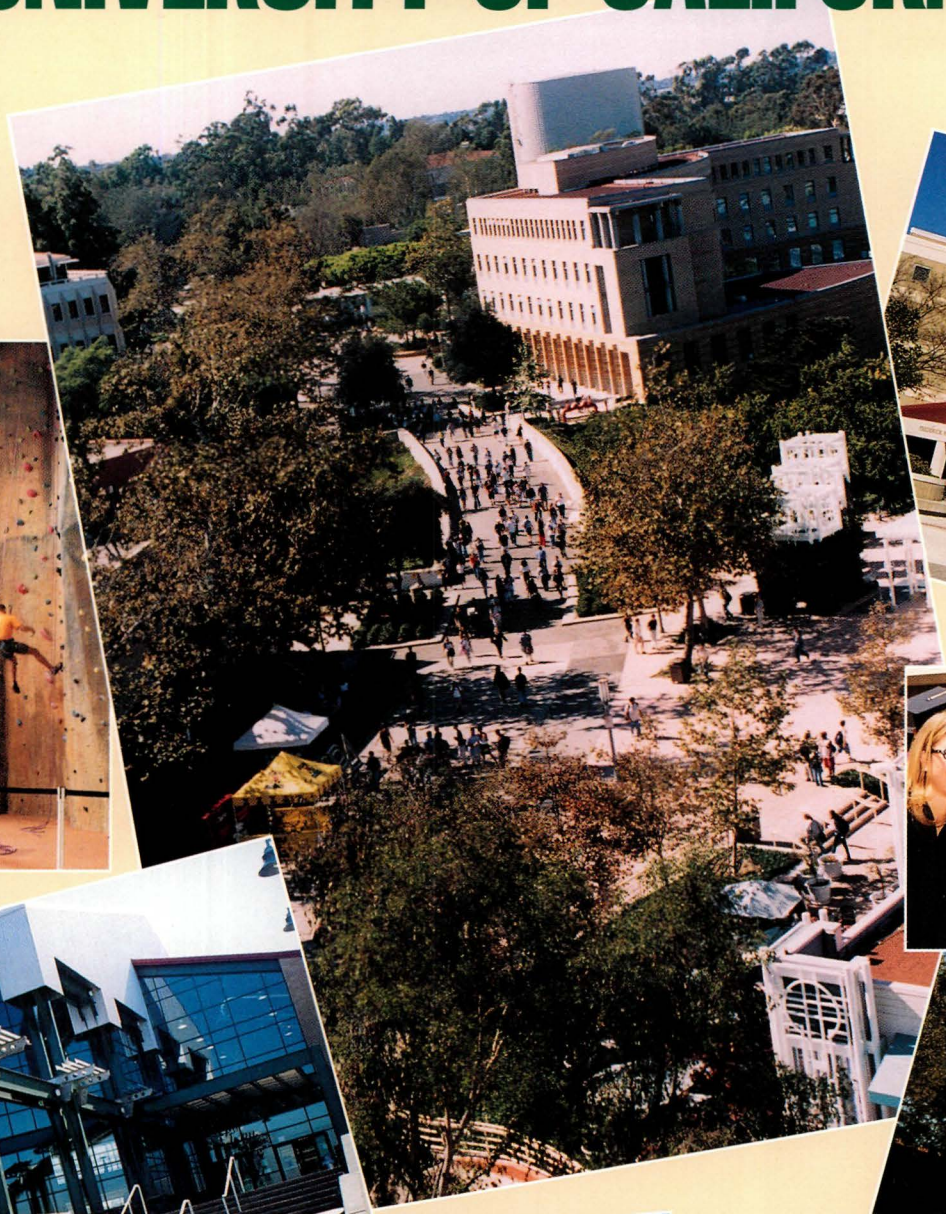
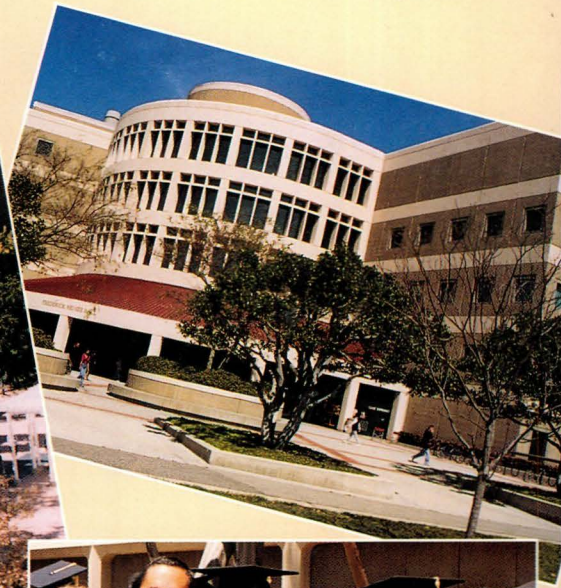
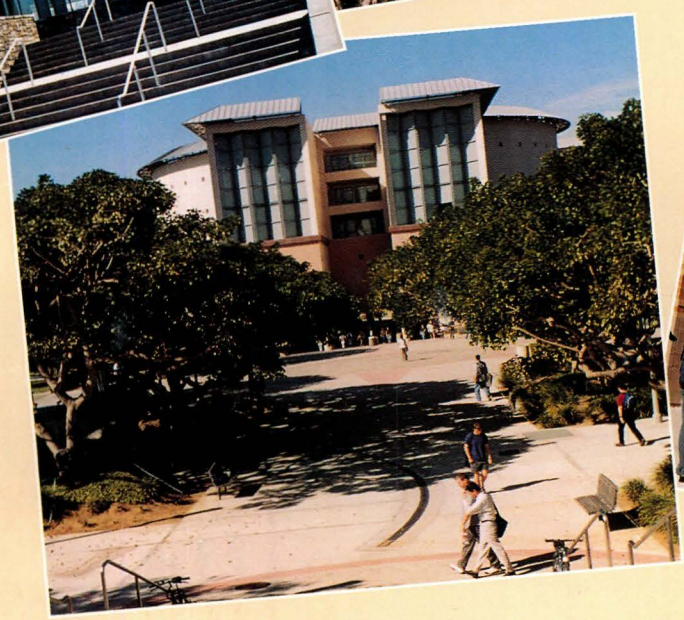
UNIVERSITY OF CALIFORNIA, IRVINE









2000–2001 General Catalogue

Academic Calendar

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

Fall Quarter, 2000

Quarter Begins ..... Sept. 18 (Mon.)
Academic Advising and Orientation ..... Sept. 18–21 (Mon.–Thur.)
Instruction Begins ..... Sept. 22 (Fri.)
Veterans' Day Holiday ..... Nov. 10 (Fri.)
Thanksgiving Holiday ..... Nov. 23–24 (Thur.–Fri.)
Instruction Ends ..... Dec. 1 (Fri.)
Final Examinations ..... Dec. 4–8 (Mon.–Fri.)
Quarter Ends ..... Dec. 8 (Fri.)
Winter Recess ..... Dec. 25–Jan. 2 (Mon.–Tues.)

Winter Quarter, 2001

Quarter Begins ..... Jan. 3 (Wed.)
Academic Advising and Orientation ..... Jan. 3–4 (Wed.–Thur.)
Instruction Begins ..... Jan. 5 (Fri.)
Martin Luther King Jr. Holiday ..... Jan. 15 (Mon.)
Presidents' Day Holiday ..... Feb. 19 (Mon.)
Instruction Ends ..... Mar. 16 (Fri.)
Final Examinations ..... Mar. 19–23 (Mon.–Fri.)
Quarter Ends ..... Mar. 23 (Fri.)
Spring Administrative Recess ..... Mar. 26 (Mon.)

Spring Quarter, 2001

Quarter Begins ..... Mar. 28 (Wed.)
Academic Advising and Orientation ..... Mar. 28–30 (Wed.–Fri.)
Instruction Begins ..... Apr. 2 (Mon.)
Memorial Day Holiday ..... May 28 (Mon.)
Instruction Ends ..... June 8 (Fri.)
Final Examinations ..... June 11–15 (Mon.–Fri.)
Commencement ..... June 16 (Sat.)
Quarter Ends ..... June 16 (Sat.)

Summer Sessions, 2001

Session I ..... June 25–Aug. 1 (Mon.–Wed.)
10–Week Session ..... June 25–Aug. 31 (Mon.–Fri.)
Session II ..... Aug. 6–Sept. 12 (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 (949) 824-7494 (voice), 824-6272 (TDD).

How to use the *Catalogue:* See page 16.

How to obtain the *Catalogue:* Copies of the *2000–2001 UCI General Catalogue* are available in person for $6 (plus tax) from the UCI Bookstore. Catalogues also are available by mail: California, $12; continental U.S., $14; Alaska and Hawaii, $17; international destinations, $21. 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 University of California, Irvine, UCI Bookstore, 210-B Student Center, Irvine, CA 92697-1550. For credit card purchases, call the UCI Bookstore at (949) 824-BOOK. To order via e-mail, send an inquiry to books@uci.edu.

The *Catalogue* also is available for reference (1) on the World Wide Web at http://www.editor.uci.edu/catalogue/, (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.

On the cover: *(clockwise from the top)* a campus view along the ring mall, looking from the UCI Student Center toward the School of Humanities; Reines Hall, named for UCI's 1995 Nobel Laureate in Physics, the late Frederick Reines; commencement: more than 90,000 students have graduated from UCI since the campus opened in 1965; Biological Sciences II has 200,000 square feet of laboratories and offices; the Humanities Instructional Building, which includes a 360-seat lecture hall and computer laboratories; the Science Library houses science, medicine, and technology collections, plus an interactive learning center for computer-based resources; and the Anteater Recreation Center, opened in January 2000, features a 35-foot rock climbing wall, weight room, elevated running track, multipurpose gym, and swimming pool.

Visit UCI on the World Wide Web at http://www.uci.edu/.

2000-2001 GENERAL CATALOGUE

UNIVERSITY OF CALIFORNIA, IRVINE

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2000–2001 General Catalogue, Volume 34

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

INTRODUCTION

THE UNIVERSITY OF CALIFORNIA

Richard C. Atkinson, **President**

The University of California (UC) 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. A tenth campus, UC Merced, could open its doors to students as early as 2004. Among the campuses there are five medical schools, three law schools, a school of veterinary medicine, and professional schools of business administration, education, engineering, oceanography, and many others. The collections of the more than 100 UC libraries are surpassed in size on the American continent only by the Library of Congress collection.

The 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 and includes 20 Nobel laureates. National Academy of Sciences membership numbers 300, 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.

Under contract with the U.S. Department of Energy, the University operates the Lawrence Berkeley, Lawrence Livermore, and Los Alamos National Laboratories. Other major research facilities include the Statewide Air Pollution Research Center, Space Sciences Laboratory, Lick Observatory, White Mountain Research Station, Scripps Institution of Oceanography, and Philip L. Boyd Deep Canyon Desert Research Center, among others.

One of the University's unique resources is its roster of University Professors. This title is reserved for certain distinguished faculty members who are recognized internationally as scholars and teachers. A University Professor may visit several UC campuses during the academic year, holding conferences and presenting lectures.

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.

Authority in academic matters is delegated by the Regents to the Academic Senate, which consists of faculty and certain administrative officers. The Academic Senate determines academic policy for the University as a whole, sets conditions for admission and the granting of degrees, authorizes and supervises courses and curricula, and advises the University administration on faculty appointments, promotions, and budgets. Additionally, each campus has a divisional Academic Senate.

The President is executive head of the total institution. Each campus has a Chancellor as its chief administrative officer. Students participate in policy-making at both the campus and University-wide levels.

The names of University Professors, Regents, Officers, and Chancellors are presented in the Appendix.

THE IRVINE CAMPUS

Ralph J. Cicerone, **Chancellor**

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

Two Nobel Prizes in 1995 for founding faculty F. Sherwood Rowland in Chemistry and the late Frederick Reines in Physics, helped to secure UCI's position among the leading American research universities. More recently, UCI has been ranked prominently along with much older universities for excellence in the arts and humanities, earth system science, management, social sciences, technology, and information systems.

For quality of educational experience and caliber of faculty, UCI consistently ranks among the nation's 10 best public universities, and among the top 50 universities overall. Election to the American Association of Universities (AAU), a group of 60 of the most distinguished research institutions, is another indication of UCI's stature in the academic community.

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

UCI is committed to the discovery and transmission of knowledge. It makes available to its 19,290 students (15,520 undergraduate, 2,680 graduate, and 1,090 health science students and medical residents) the education, skills, and credentials which provide the basis for lifelong personal and professional opportunities.

UCI's education and research missions are fulfilled in its academic units, which are described briefly below, and in its formal research units, which are described in the 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 1,020 students in the School, including 910 undergraduate and 110 graduate.

The **School of Biological Sciences** is one of the campus' larger academic units, with 2,780 students (2,610 undergraduate and 170 graduate). Faculty research areas include neural plasticity and behavior (which in part encompasses the development of the nervous system, memory, response to injury, and degenerative brain diseases such as Alzheimer's); the nature of cell-cell interactions; pattern formation; the elucidation of ecological conditions and evolutionary histories that have been the driving forces in organism design and functional diversity; the organization and expression of genes; biomolecular structure; molecular pathogenesis; and cell biology.

FROM THE CHANCELLOR

On behalf of the entire UCI community, welcome to the Irvine campus.

It's the beginning of a new century and a new world of intellectual opportunity for you as students. You've arrived at UCI as the University is embarking on a period of expansion, both in size and academic programs. We anticipate a steady rise in enrollments over the next decade as the State's college-age population increases. At the same time, UCI's reputation for innovation and high academic standards is attracting more of the nation's brightest students and faculty. UCI students compete successfully for the most coveted scholarships and fellowships. Their competitive edge comes from being at a research university where involvement in the intense creativity of the research process often begins during the undergraduate years.

UCI now is regarded as one of the top public universities in the country. And many of our programs have achieved standing with those of the best private universities. Our strong faculty are the key. Two of UCI's founding faculty have received Nobel Prizes. Many others have attained worldwide recognition for their research, while gaining equal respect on campus for their ability to engage students in the excitement of learning. Faculty also are responsible for UCI's strengths in virtually every discipline from the arts, humanities, and social sciences, to technology and management.

Increasingly, society and the workplace demand knowledge that crosses traditional boundaries. So we have developed programs that combine studies such as art and technology, medicine and engineering, ecology and the social sciences, business and computer sciences, all designed to prepare students for roles as citizens and scholars in the new century.

UCI's partnerships with the fast-growing Orange County community also create incomparable opportunities for our students. They include work experience in a dynamic international marketplace, learning as you serve the community through the campus' outreach and public service groups, or simply benefiting from the advice of UCI alumni and leaders from every area of society.

Whether you are a graduate or undergraduate student, UCI offers a place to pursue whatever course you have in mind for your future, or to change that course should you decide to explore other educational goals. I look forward to seeing you on campus, and to sharing these next few years in your lifetime of learning.

Sincerely,

Ralph J. Cicerone
Chancellor

The **Department of Education**, with 200 postbaccalaureate students, offers an M.A. in Educational Technology Leadership, an Ed.D. in Educational Administration, and credential programs for current and prospective teachers and administrators in California's public elementary and secondary schools. The Department also offers an undergraduate minor in Educational Studies. Foci of the Department's research and instructional programs are educational technology and educational leadership. 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 **Henry Samueli School of Engineering,** with 1,870 students (1,550 undergraduate, 320 graduate), focuses on the analysis and design of physical systems applying modern scientific principles to the development of technology for society. The major research disciplines are aerospace, biochemical, biomedical, chemical, civil, computer, electrical, environmental, materials science, and mechanical engineering. Research areas include biochemical and bioreactor engineering, earthquake engineering, water resources, transportation, parallel and distributed computer systems, intelligent systems and neural networks, image and signal processing, opto-electronic devices and materials, high-frequency devices and systems, integrated micro and nanoscale systems, fuel cell technology, fluid mechanics, combustion and jet propulsion, materials processing, robotics, and modern control theory.

The **School of Humanities** faculty 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, philosophical analysis, historical inquiry, art history, East Asian languages and literatures, and bilingual education. The faculty also participate in programs that cut across disciplinary boundaries in African-American Studies, Asian American Studies, Latin American Studies, and Women's Studies. At the core of the educational mission of the humanities is the goal of imparting to students critical tools of analysis, ways of seeing, knowing, explaining, describing, and understanding, that will allow them to comprehend the world around them. The School has 1,660 students, including 1,330 undergraduate and 330 graduate.

The **Department of Information and Computer Science** (ICS) has 1,170 students (1,000 undergraduate and 170 graduate). ICS faculty are actively engaged in research and teaching in artificial intelligence, especially machine learning, data mining, automated reasoning, brain modeling, and biomedical computing; computer systems design, including computer-aided design, hardware- software codesign, optimizing compilers, parallel processing, and networks; 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; and theory of design and analysis of algorithms and data structures, including graph algorithms 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.

Graduate School of Management faculty research and teach in traditional management fields including organizational behavior, information technology, finance, marketing, international business, managerial economics, new ventures, accounting, decision sciences, operations management, strategy, public policy, and health care management, as well as focus on how the implementation and integration of technology combined with information management are changing the way business is conducted. GSM has 320 students in the M.B.A. and Ph.D. programs, 300 in the undergraduate minor in Management, and 550 in the Executive M.B.A., Health Care Executive M.B.A., and Fully Employed M.B.A. Programs.

The **School of Physical Sciences** has a student body of 1,000 (740 undergraduate and 260 graduate). Researchers in the School are conducting investigations in atmospheric chemistry (including the discovery of the adverse impact of human-made chlorofluorocarbon compounds on the earth's ozone layer), biogeochemistry and climate, synthetic chemistry, laser spectroscopy, condensed matter physics, elementary particle physics, plasma physics, and pure and applied mathematics and mathematical physics.

The **School of Social Ecology**, a multidisciplinary unit established in 1970, is unique to UCI. The School's central objectives are the application of scientific methods to the analysis and resolution of societal problems and the development of theory and knowledge pertinent to 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 1,660 students in the School, including 1,510 undergraduate and 150 graduate.

The **School of Social Sciences,** with 4,290 students (4,070 undergraduate and 220 graduate), is the largest academic unit at UCI. The faculty, many 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 1,080 students (380 medical, 620 resident-physicians and fellows, and 80 graduate). It offers one of the country's largest residency training opportunities in primary care and internal medicine and houses some of the most advanced equipment in medical imaging and laser medicine available in the world. 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 UCI's educational approach is the emphasis placed on student involvement in independent study, research, and the creative process as a complement to classroom study. Independent research in laboratories, field study, involvement in writing workshops, and participation in arts productions are normal elements of the UCI experience. In many departments, special programs and courses which involve students in original research and creative activities are integrated into the curriculum.

UCI provides an atmosphere conducive to creative work and scholarship at all levels, to 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

UCI's instruction and research programs focus on fundamental areas of knowledge, and at the same time provide for interdisciplinary and professional study through the School of the Arts, School of Biological Sciences, Department of Education, Henry Samueli 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 mission of Student Affairs is to support UCI's academic goals, enhance the quality of student life, foster civic leadership, and promote the general welfare of the campus community. UCI's goal is to become a campus of choice among highly talented scholars. Student Affairs offers comprehensive programs, initiatives, and services which promote the broad goals of the University while sustaining an active focus on student development and campus life, including housing, health services, financial aid, admissions, registration, career planning, and child care. Student Affairs also develops student leadership skills by providing opportunities for community service and research internships.

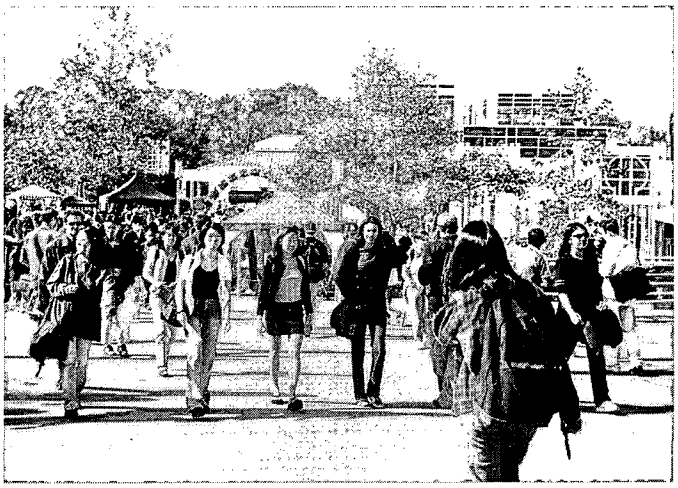
The Division of Undergraduate Education provides leadership in developing policies and programs for the improvement of undergraduate education in such areas as general education, retention, advising, curricular development, undergraduate scholarship and research activities, international education, grant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

The Vice Chancellor for Research and Dean of Graduate Education 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 the area of education, the Dean of Graduate Education serves as the academic dean for all graduate students and is responsible for admissions, graduate student services, graduate student support, and the Graduate Diversity Program.

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 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 credential programs of the Department of Education are approved by the California Commission on Teacher Credentialing (CCTC); the undergraduate majors in Aerospace, Chemical, Civil, Computer, Electrical, Environmental, 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.S. program in Genetic Counseling is accredited by the American Board of Genetic Counseling; the Graduate School of Management is accredited by AACSB–The International Association for Management Education; 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; and the Master of Urban and Regional Planning program is accredited by the National Planning Accreditation Board.

*985 Atlantic Avenue, Suite 100, Alameda, CA 94501; (510) 748-9001.



UCI's 19,290-member student body includes 15,520 undergraduates, 2,680 graduate students, and 1,090 health science students and medical residents.

Cooperative for Problem Resolution

The Cooperative for Problem Resolution (CPR) provides mediation services, informal conflict negotiation, and formal dispute resolution. It is comprised of the Campus Mediation Program, the Faculty and Staff Assistance Program, the Office of Equal Opportunity and Diversity, and the Office of the University Ombudsman.

The Campus Mediation Program, the Faculty and Staff Assistance Program (FSAP), and the Ombudsman's Office offer confidential, informal methods for dispute resolution. The Office of Equal Opportunity and Diversity (OEOD) conducts formal investigations of complaints involving discrimination and/or sexual harassment. Although the CPR philosophy emphasizes and encourages the use of informal dispute resolution before filing a formal complaint, a formal complaint can be filed with OEOD without prior visits to the Campus Mediation Program, Ombudsman, or FSAP.

OFFICE OF EQUAL OPPORTUNITY AND DIVERSITY

The UCI Office of Equal Opportunity and Diversity (OEOD) provides consultation services and training programs 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 diversity. It also develops and monitors UCI's affirmative action plan as required by Federal regulation for staff and faculty.

OEOD 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, creating organizational change, and providing support for the University's commitment to diversity, OEOD offers a variety of staff and faculty career development programs, as well as various workshops on diversity, cross-cultural communication, and

Aldrich Park, a 21-acre oasis of mature trees in the center of campus, provides a peaceful setting to enjoy breaks between classes.

conflict resolution. OEOD is located in 524 Administration Building; telephone (949) 824-5594.

OFFICE OF THE UNIVERSITY OMBUDSMAN

The University Ombudsman is available to assist students, faculty, staff, and visitors with problems they may encounter while on the UCI campus. The University Ombudsman responds to individual grievances or group petitions by hearing complaints; clarifying issues; making appropriate on- and off-campus referrals; and providing a confidential, impartial, and informal setting for conflict negotiation. The Office also sponsors the Campus Mediation Program in which trained volunteer mediators provide free, confidential mediation services for the campus community. The Office is located in 437 Administration Building; telephone (949) 824-7256.

The Campus Setting

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

Fifty miles south of Los Angeles, five miles from the Pacific Ocean, and nestled in 1,489 acres of coastal foothills, UCI lies amid rapidly growing residential communities and the dynamic international business environment of Orange County and the surrounding region.

The famed sailing and surfing beaches of Newport, Laguna, and Huntington are a 10-minute bike ride from campus, while hiking trails, desert camping, or mountain resorts for snow boarding and skiing are within two-hour's travel distance from Irvine. The campus itself is a natural arboretum of native species, as well as trees and shrubs from all over the world. Adjacent to the campus, the San Joaquin Marsh serves as a natural classroom or peaceful refuge, with trails for viewing the rich diversity of wildlife.

A full roster of intramural sports and recreation events helps to fill the daily fitness needs of students, along with UCI's new Anteater Recreation Center. This 92,000-square foot, state-of-the-art facility includes a pool, gymnasiums, racquetball courts, weight room, and jogging track. UCI is also an NCAA Division I campus that competes in men's and women's intercollegiate athletics.

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

With plenty of land for growth, UCI is building to accommodate greater numbers of students, as well as to provide the most updated classroom and laboratory space. Projects planned or under way include a natural science building, an earth system science research building, a multipurpose science and technology building, and a medical science research building. On the west campus, the 180-acre University Research Park is attracting private companies such as America Online, Canon Information Systems, and Cisco Systems, that agree to collaborate with UCI faculty and students on internships, research, and other programs.

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

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

CELEBRATE UCI

On Saturday, April 21, 2001, UCI will host its annual open house, Celebrate UCI. Among the day's events are the Wayzgoose Medieval Fair, housing and campus tours, and lectures and presentations, including information about admissions, academic programs, and financial aid. Additional information is available from the Office of the Dean of Students; telephone (949) 824-5182.

Instructional and Research Facilities

UNIVERSITY LIBRARIES

Gerald J. Munoff, **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 print collection, carefully selected and developed in conjunction with the campus academic plan, is augmented by access to a growing number of electronic resources. These include resources that are part of the rapidly expanding California Digital Library, the collections of the University of California library system, and several systemwide cooperative acquisitions programs.

The UCI Libraries have more than two million volumes and approximately 19,000 active serial subscriptions that are available for study, teaching, and research. With the exception of certain materials, 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 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 facilitates the rapid availability of materials. 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 licensed CD-ROM and Web-based bibliographic, abstracting, and full-text resources, including dictionaries, encyclopedias, electronic journals and books, and other useful subject resources. In addition, the MELVYL® Catalog, available via the California Digital Library and the UCI Libraries Web site, connects users at UCI with the vast resources of the nine-campus University of California library system. Information about the Libraries may also be found on the World Wide Web at http://www.lib.uci.edu/.

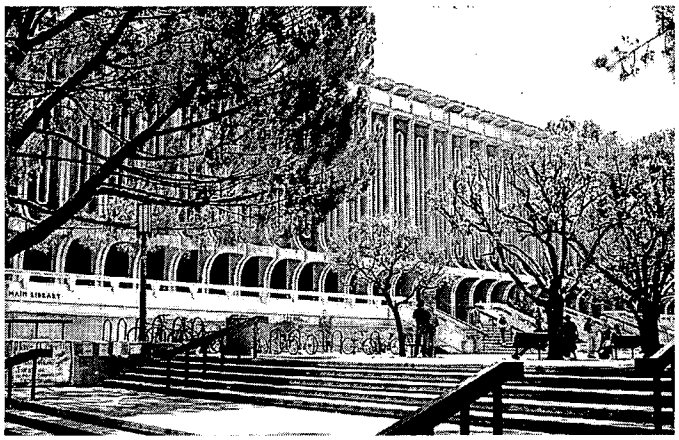
The UCI Libraries conduct an active instruction program to help users become familiar with rapidly expanding information resources and technologies. The program includes a formal course in library research techniques (Humanities 75, Library Research Methods), course-related and course and program-integrated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

Reopened in winter 1997 upon completion of an extensive retrofit and renovation project, the Main Library supports teaching and research in arts, humanities, social sciences, education, and business and management. The Main Library features a state-of-the-art Multimedia Resources Center with 32 computer workstations and a video/ laserdisk playback area, a Technology Enhanced Classroom for hands-on library instruction, and a Student Communications Room for easy access to e-mail.

The Reference and Government Information Desk on the first floor serves the collections of the Main Library's Research and Instructional Services Department and of the Government Information Department. The Research and Instructional Services Department maintains an extensive open-shelf collection of printed materials and a growing number of computerized resources. Librarians provide reference assistance and information on a variety of topics to campus and community users. The Department publishes a series of reference guides in paper and electronic format to aid in researching both general and specialized topics.

The government information collection contains over 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 information on local topics issued by governmental and nongovernmental agencies. The Government Information Department also houses a large collection of government publications and primary research materials on microform. Microform reading and photocopying machines 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



The Main Library is one of UCI's original buildings.

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.

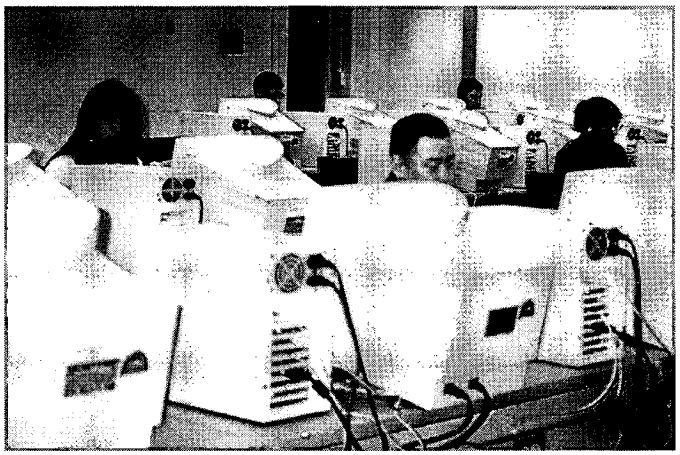
Current Periodicals/Newspapers houses current unbound issues of humanities and social sciences journals and other periodicals, foreign and domestic newspapers, a wide variety of popular magazines for recreational reading, and back issues of newspapers and journals on microform.

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. A card system is used for photocopies, computer print requests, and various other printing jobs. 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.

Opened to the public in mid-1994, the Science Library is the second major library on the UCI campus. The six-story building centralizes the science and technology collections formerly housed in four separate campus libraries and contains materials in astronomy, biology, chemistry, computer science, engineering, geosciences, mathematics, medicine, physics, and allied fields. The facility features an Interactive Learning Center, a reference consultation and user self-search room, 2,200 reader stations, a current periodicals reading room, a microcomputer laboratory, a 24-hour study hall, special reading rooms for faculty and graduate students, and the technical services operations for the entire UCI library system. The Science Library offers reference assistance, computer-assisted reference service, instruction in library use and information management, and CD-ROM user self-search workstations.



Every UCI student receives an e-mail account and has access to computer laboratories, some of which are open 24 hours a day.

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

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 1,000 clinical serials subscriptions. The Medical Center Library provides a full range of services, including reference service, CD-ROM user self-search workstations, and two computer technology facilities featuring an instructional laboratory and an Information Technology Center.

OFFICE OF ACADEMIC COMPUTING

The Office of Academic Computing (OAC) provides telephone, network, and computing services in support of research and education at UCI. OAC provides central computing services, computer laboratories, departmental and research-group support services, and campuswide technical coordination. The campus network infrastructure maintained by OAC provides connectivity on campus and to the world-wide Internet.

OAC provides coordination and infrastructure for UCI's Electronic Educational Environment (EEE), a cooperative campuswide venture to enhance the educational experience using computer-mediated communications and electronic resources. As a part of EEE, OAC provides electronic access services to all UCI students, including Educational Access (EA) e-mail accounts and access to the Internet and class information resources. For more information see the EEE Web site at http://eee.uci.edu/.

Approximately 110 MS-Windows and Macintosh computers are available 24 hours a day 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. Computer peripherals including flat-bed image and text scanners and laser printers are also available. While school is in session, OAC student consultants are on duty in Room E1140 to provide assistance to those using the facilities.

An additional 50 Pentium and Power Macintosh computers are located in the Engineering and Computing Trailer (ECT) and are available for drop-in use when not scheduled for classes. OAC also operates "OAC@HIB," a drop-in instructional laboratory in the Humanities Instructional Building. This laboratory has 30 Pentium II computers and is open to students of any major.

OAC offers a variety of additional services. For more information see OAC's Web site at http://www.oac.uci.edu/. Offices are located in the Engineering Gateway Building, Room E2130. The OAC Help Desk may be reached by sending electronic mail to oac@uci.edu or by calling (949) 824-6116.

UCI ECOLOGICAL PRESERVE

The 60-acre UCI Ecological Preserve consists of several small hills and surrounding flatlands bearing remnants of coastal sage scrub flora and associated fauna. The Preserve is located on the campus and is set aside for teaching, research, and use by the campus community. Additional information is available from the Department of Ecology and Evolutionary Biology; telephone (949) 824-6006.

NATURAL RESERVES SYSTEM

The University of California manages and maintains a system of 33 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 Marsh Reserve and the Burns Piñon Ridge Reserve. Additional information is available from the manager; telephone (949) 824-6031.

San Joaquin Marsh Reserve

The San Joaquin Marsh Reserve, one of the last remaining marshes in Southern California, is a 202-acre 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 226 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 a dormitory and research station, as well as primitive camping facilities, and is used primarily for overnight field trips and research by faculty and students from the School of Biological Sciences.

UCI ARBORETUM

The UCI Arboretum is a botanical garden developed and managed by the School of Biological Sciences. It contains areas planted with floras adapted to climates similar to those of Southern California. The Arboretum maintains a large collection of 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 (949) 824-5833.

LASER MICROBEAM AND MEDICAL PROGRAM

The Laser Microbeam and Medical Program (LAMMP) was established at UCI in 1979 as a national user facility providing a unique set of laser microbeam biotechnologies to individual researchers. LAMMP functions as a research, training, and service facility, and provides interaction between the laser industry and the academic biomedical optics community. LAMMP provides laser microbeam technologies for optical manipulation and functional imaging of

living cells, and for developing noninvasive systems for monitoring and imaging physiology in living tissue. The program is conducted in the Beckman Laser Institute and Medical Clinic and is funded through the Biotechnology Resources Program of the National Institutes of Health. Additional information is available from the LAMMP coordinator at (949) 824-3664 and on the World Wide Web at http://www.bli.uci.edu/lammp/lammp.html.

UCI MEDICAL CENTER

UCI Medical Center, the only university hospital in Orange County, offers a full scope of acute- and general-care services including a comprehensive neuropsychiatric center, a regional burn center, and one of only 14 National Institute on Child Health and Human Development-designated mental retardation research centers in the nation.

Located in the City of Orange, 13 miles from the UCI campus, UCI Medical Center has more than 350 specialty and primary care physicians. Perinatologists are available for the expert management of high-risk pregnancies, and UCI Medical Center has the most sophisticated neonatal unit in the county to care for critically ill newborns. The Medical Center houses a 24-hour emergency department and is designated as Orange County's only Level I Trauma Center—the most comprehensive for the treatment of life-threatening injuries.

Many of UCI Medical Center's facilities are the only of their kind in the county, including a National Cancer Institute (NCI)-designated comprehensive cancer center and a comprehensive epilepsy program. The Chao Family Comprehensive Cancer Center offers a full range of cancer therapies and research programs, including laser and radiation therapy, endoscopic ultrasound, and immunotherapy. The UCI Comprehensive Epilepsy Program uses the latest in sophisticated procedures and therapies to diagnose and treat both children and adults with epilepsy, particularly those whose seizures have continued despite standard treatments. As part of its focus on family and preventive health, UCI Medical Center has five neighborhood health centers located throughout Orange County, including Anaheim, Irvine (on the UCI campus), Orange, Santa Ana, and Westminster.

UCI Medical Center also serves as the principal clinical facility for the College of Medicine's teaching and research programs.

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 (949) 824-8641.

ADDITIONAL FACILITIES

Information about many other UCI research and instructional facilities and programs is available in the academic unit sections and the Research and Graduate Studies section of this *Catalogue.*

Office of University Advancement

The Office of University Advancement is responsible for increasing support and awareness of UCI's teaching, research, and public service missions through a strategic effort incorporating development, communications, alumni relations, corporate relations, and advocacy. These combined efforts provide a bridge between the University and community, promoting a climate of understanding, support, and access.

In an era of decreasing State 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, raising a record $49.5 million this past academic year.

UCI's development program works hand-in-hand with UCI schools and programs to secure major gifts from individuals to support faculty priorities; coordinates campuswide gift solicitations from charitable foundations; assists donors through gift planning who wish to include UCI in their wills or estate plans; and secures a large number of annual gifts through the Chancellor's Club, Daniel G. Aldrich Jr. Society, Scholar's Circle, and Annual Fund. In addition, numerous support groups offer affiliation with academic units, athletics, and student programs.

The Communications Office assists the University in articulating its missions and priorities and informing the public of UCI's achievements, academic accomplishments, and events. Through a comprehensive program that incorporates media relations, publications, electronic communications, and the World Wide Web (http://www.communications.uci.edu/), a wide variety of audiences are reached on an ongoing basis. Communications also produces the *UCI Journal* and *UCI News.*

The UCI Alumni Association advances and supports the interests of UCI and its graduates through recruitment and retention of students, providing 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, networking via the Internet, and participation in seminars and special programs.

Providing liaisons between UCI and the business community are the Office of Corporate Relations, which facilitates linkages for corporate education, employee recruitment, and research and technology alliances, and the Chief Executive Roundtable, which fosters the exchange of ideas, advice, and assistance between UCI and local CEOs. In addition, University Advancement works closely with UCI faculty and the business community in the development of University Research Park, where UCI faculty and companies are collaborating on research to develop new technology and related businesses.

The UCI Advocacy Program is responsible for enhancing public understanding and support of UCI and the University of California. The program works to ensure that the University's mission, as well as legislative and budgetary objectives, are given due consideration by elected officials and the general public.

For additional information, call University Advancement, (949) 824-8696; Development Office, (949) 824-8696; Communications, (949) 824-6922; Alumni Association, (949) 824-2586; Corporate Relations, (949) 824-8779; Advocacy Program, (949) 824-7382.

UCI ACADEMIC SENATE DISTINGUISHED FACULTY

ERMANNO BENCIVENGA

Distinguished Faculty Lectureship Award for Teaching, 1999-2000

Professor of Philosophy

The foundational text of Western philosophy is the Platonic corpus, which presents its readers with a curious anomaly. The author of this text is Plato, but the text consists of dialogues, in which the main interlocutor is most often Socrates, who was Plato's teacher and who himself wrote nothing. So the question arises: when we read a dialogue of Plato, whose views are we being presented with? More specifically, do those views belong to Socrates, and Plato is just reporting on them; or is it rather that the views are Plato's, and Socrates is a mere spokesperson for them?

Scholars have debated this question for centuries, and the consensus is that the answer varies for different dialogues: early on, Plato was largely reporting conversations he had heard; later, he was making up conversations and using the figure of Socrates to expound his own philosophy. There is a lot of good sense to this reading, but there is also a problem with it: if we follow it too strictly, we tend to forget that the original question was ever there and we no longer pay attention to the crucial fact that, at the beginning of our philosophical reflection, we encounter this two-headed monster, this Socrates/Plato so hard to parse out, this difficulty in attributing credit. And we should not forget any of that, because it is telling us something of great significance.

It tells us that philosophy is best thought of not as the private possession of an individual but as the evolving product of a communal activity; hence that when philosophy "happens" it may be hard to say *who* made it happen. Have you ever had a really meaningful conversation with a group of friends, where important matters of life and death suddenly appeared in a new light, and at the end everyone felt as if they understood things better, as if they were more attuned with themselves? And did you try, after having that experience, to make some specific member of the group the *author* of it? Wouldn't you have thought that anyone who did that would be doing an injustice to the event, because it was the whole group *together* that generated the experience?

I believe that philosophy is best done in conversation. Not casual conversation, by any means, but rather a passionate and informed one—where the interlocutors care enough about the subject to want to go as deep as possible into it, for as long as it takes. In a university, teaching offers a wonderful opportunity to develop this kind of conversation: teaching at all levels, because even in the most introductory courses the students, if they are passionate enough and seriously want to become informed, often end up asking the most important questions—those which scholars might consider too basic to worry about. That is why I just don't know where my teaching ends and my "research" begins: some of my best ideas I had in the classroom, and even when I am not there ideas always arise in an imaginary conversation with someone I am trying to relate to—with a companion in the common search for truth. I consider myself fortunate to have so many bright and engaged young people around me, with whom to conduct this search.

ARNOLD BINDER

Daniel G. Aldrich Jr. Distinguished University Service Award, 1999

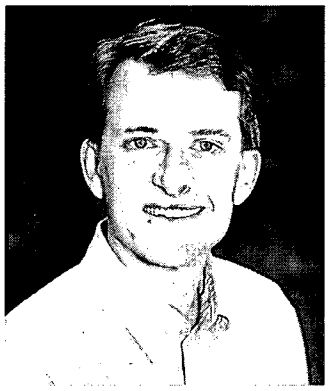
Professor Emeritus of Criminology, Law and Society

In referring to career development among faculty members in major research universities such as the University of California, Irvine, the expression "publish or perish" is occasionally used. While there are obvious disparaging implications in that usage, the expression does summarize, though crudely, the basic reason why education at a major research university is so persistently sought by the most promising graduates of secondary schools.

UCI and the other research universities are, in short, the hubs of creative activity in the United States; reflective of that condition, the University of California is often referred to as the research arm of the State. The leaders in that creative activity are of course the professors in their capacities as the leading investigators of research projects. Such projects may result in breaking the genetic code for susceptibility to a certain disease, providing a new understanding of Shakespeare and his plays, discovering a planet resembling Earth in a distant galaxy, or developing the concept of a new approach to urban transit. Indeed, hardly a day passes without appearance in the national media of an important new discovery at a university in the biological sciences, the social sciences, the physical sciences, medicine, or the humanities. One consequence of that level of activity is the award of many honors to faculty members, as was the case in the award of the Nobel Prize to two physical scientists at UCI.

Returning to the opening comment, it is expected that faculty members at places like UCI will perform creatively, and publish the results of that creativity. If not, they will not make the grade—and thus perish in an academic sense. The gain for students attending those universities is that they learn from, and interact with, the most innovative, creative minds in the world, and have the opportunities to work with them on their research projects.

STEVEN C. GEORGE



Distinguished Assistant Professor Award for Teaching, 1999-2000

Assistant Professor of Chemical and Biochemical Engineering

My research and teaching activities at UCI are inexorably intertwined creating an environment that is rewarding on both personal and professional levels. My teaching techniques are, in many ways, motivated by my experiences as a student and observations I have made during my research endeavors. As an undergraduate I endured many days of lecture after lecture, yet was met with the frank realization that there was no way in which I could absorb all of the material presented. When I entered medical school, I was quickly placed in a similar environment—lecture after lecture. However, there was much discussion at the time of a learning technique called Problem-based Learning (PBL). The explosion of biological, pharmacological, and medical knowledge provided the motivation for medical schools to consider PLB techniques—the "formal" education a medical student receives will be essentially obsolete in a decade. Thus, perhaps the most important skill for physicians to have is the ability to search out information and solve a problem on their own. This is the essence of PBL—a student learns in the context of solving problems and thus gains a factual database of knowledge along the way.

I use PBL to varying degrees in my courses; the best example is in my "Heat and Mass Transfer" course when I have the students break into teams of four and design a heat exchanger just like a practicing chemical engineer might. The caveat is that I never lecture in class on this topic. This is, at first, very scary for the students, but then exciting and stimulating as they began their journey of self-directed learning. As this process has evolved over the last four years, I have come to appreciate that this project is exactly what I do in my research endeavors. I become interested in a problem and invariably I have never had a lecture on this material, or more importantly, if I did I cannot remember any of the material. Thus, I constantly find myself searching for information until I can adequately understand the new problem.

I believe now that a combination of didactic lectures with PBL techniques is perhaps the most effective way to learn. My greatest challenge now in teaching is to develop PBL techniques in larger classroom settings where small groups are difficult to manage.

CLAIRE JEAN KIM

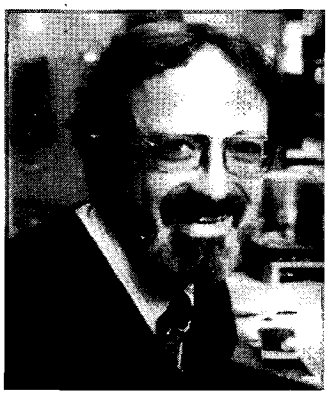
Distinguished Assistant Professor Award for Teaching, 1999-2000

Assistant Professor of Asian American Studies and Political Science

My research and teaching focus on the role of race in American society. Generally speaking, I am interested in understanding and explaining how racial categories have been used to institute and perpetuate political, economic, and social inequalities from before the founding of the nation to the present. I also study how subordinated racial groups have sought empowerment via social movements.

Teaching about race at the undergraduate level is both difficult and exciting. It is difficult because race is one of those topics that we all think we know something about. Thus students often come into the classroom with fixed, received opinions on race. They also feel quite a personal investment in these beliefs: their identity and sense of place in the world are in part derived from them. Teaching about race is exciting for the same reasons. It is precisely because students feel so strongly about race and think that they "know" it that they experience new ways of looking at race with exhilaration.

My aim in all of my teaching is to help students to see things in a new light and to rethink what they thought they knew. They can then take their newly developed faculty of critical thinking and apply it to other areas of learning and life. In my view, undergraduate education is meant not only to prepare students for careers but to stimulate them to think about their lives and the world around them.



GEORGE SPERLING

Distinguished Faculty Lectureship Award for Research, 1999-2000

UCI Distinguished Professor of Cognitive Sciences and Biological Sciences

In college, at the University of Michigan, I wanted to be a scientist, but I didn't know which branch of science, so I majored in chemistry, physics, mathematics, and biology. Then I did a brief stint in biophysics before discovering physiological psychology and, at last, perceptual and cognitive psychology. I received my Ph.D. from Harvard in 1959 for a thesis on short-term memory. My goal then, as now, was to apply the quantitative and theoretical methods of the hard sciences to the analysis of cognitive processes.

My research has dealt with problems in short-term memory, attention, and perception. Motion perception is a recent example. In the 1950s, Werner Reichardt, studying insect vision, formulated the first plausible computational theory of motion perception. In the 1980s, Jan van Santen and I were able to modify this theory for human vision, and to show that it made extremely accurate predictions of human performance. The advantage of a computational theory is that one can derive predictions of when it is expected to fail. Charlie Chubb and I used computers to create stimuli that would be completely ambiguous to a Reichardt computation but in which humans easily perceived motion correctly. We formulated a theory of a "second-order" motion system that could extract these kinds of motion. Subsequently, because the theory was computational, Zhong-Lin Lu and I were able to generate motion stimuli that humans perceived correctly but for which both the Reichardt (now called first-order) and second-order computations failed, implying a third-order motion system. By testing human observers with computer-generated stimuli, we and others have been able to characterize each of these three motion systems. The same methods have enabled neurologists to identify brain areas critical for the perception of first- and second-order motion; the brain areas associated with third-order motion have yet to be identified.

I discovered early that collaborative research is the most fun, and my current research continues these themes in vision and attention with student, postdoctoral, and faculty colleagues.

The UCI Human Information Processing Laboratory, where these projects are carried out, offers computer facilities for almost any project in perception or cognition. Students learn about cognitive science and also acquire facility with computer systems, with complex, modern experimental techniques, and with methods of modeling and formal theory construction to develop the diverse technical skills they need to work at the forefront of knowledge.

WANG FENG

Distinguished Assistant Professor Award for Research, 1999-2000

Associate Professor of Sociology

When UCI was founded in the 1960s, the world was a very different place from the one we are living in now. The world's population was only 60 percent of its current size, and of those who were alive at that time, close to 40 percent were living under one form or another of the socialist or communist political and economic systems. The world 35 years ago was also filled with turbulent revolutions and far-reaching social changes. The United States, for instance, was witnessing a civil rights movement to end racial inequality at home, and at the same time, a costly war in Vietnam aimed to contain communism abroad. Socialist countries, from Czechoslovakia to China, were also looking for ways to deal with the political and economic problems that surfaced under socialism. Student demonstrations and Red Guards filled the streets from Prague to Beijing.

At the turn of the new century, the world is 40 percent larger (in the number of people) and the socialist planned economic system has by and large become a part of the twentieth century history. But the world is no less interesting to live in than in the 1960s, when UCI was born. Rapid expansion of the world's population, mostly in economically poor countries, raises a large number of issues, from resource utilization and distribution, new waves of international migration and urbanization, to environmental degradation and global warming. As the world population grows, the world itself also becomes more compact, as we are compelled to be in closer contact with one another. This compactness is made even more apparent with the arrival of the Internet.

The world is nevertheless still very divided. The end of the Cold War has not resulted in only peace and prosperity as some had hoped. New economic crises have occurred, and ethnic cleansing wars and hatred have been waged. The transition away from socialism in places like Russia has led to extreme poverty, rampant crime, and even shortening of human lives at the national level. Inequalities in living conditions and in economic and political power, both internationally and nationally, have not narrowed. On the contrary, there are signs to show that they are on the rise.

To be a student or a professor gives one the opportunity to learn and to understand the world we are living in. And UC Irvine is especially an increasingly attractive place to conduct such learning. UCI not only has a ethnically diverse student body who contribute their own experiences to the learning process on a day-to-day basis, but has also made significant investments recently in expanding the international component of the curriculum. In the past three years alone, UCI has added an undergraduate major in International Studies and a minor in Asian Studies, and has established a Center for Asian Studies, as well as an M. A. program in Demographic and Social Analysis, to name only a few of the new international components that I am personally involved with. UCI is therefore quickly becoming a major institution for those who want to learn about this larger, more compact, and at the same time, more divided new world.

PREADMISSION MATTERS

OFFICE OF ADMISSIONS AND RELATIONS WITH SCHOOLS

The mission of the Office of Admissions and Relations with Schools, a division of Student Affairs, is to: (1) optimize UCI's undergraduate enrollments by implementing Academic Senate, universitywide, and campus policies for the selection and admission of new freshman and transfer students; and (2) stimulate and advance cooperative educational relationships between UCI and California schools and colleges. The Office 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 (949) 824-6703; World Wide Web: http://www.reg.uci.edu/UCI/ADMISSIONS/.

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; and (2) various educational organizations designed to facilitate regional cooperation (South Coast Higher Education Council).

School and College Relations

Staff: (1) advise prospective students, their parents, teachers, counselors, and school administrators regarding academic programs and admission requirements, and assist them with UC application and enrollment processes; (2) increase public awareness by making presentations to schools, colleges, and the community regarding UCI and the University of California, and by creating publications which explain admissions policies and procedures, academic options, housing, financial aid, and student life opportunities; (3) provide general information on UC admissions and programs for all UC campuses; (4) 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 enhance the academic success of students; and (7) sponsor an Academic Talent Search to identify gifted and high-ability sixth- through tenth-grade 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) for high school students, and UCI's 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; (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. 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. Articulation agreements may be viewed on the World Wide Web at http://www.assist.org/.

Campus Tours

Student-led tours of the campus are conducted weekdays at noon, except during academic recesses; Saturday tours are offered during October, November, and April only. To confirm tour dates, times, and parking instructions and to arrange tours for school groups of 10 or more during the regular academic year, call (949) 824-6703.

HOW TO USE THE CATALOGUE

Because the *UCI General Catalogue* must be prepared well in advance of the year it covers, changes in some programs and courses inevitably will occur. The selection of courses to be offered each quarter is subject to change without notice, and some courses are not offered each year. The *Schedule of Classes,* a publication available from the Registrar's Office shortly before registration begins each quarter, provides more current information on courses, instructors, enrollment procedures and restrictions, 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 *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

Included in the academic unit sections are the following kinds of information:

a. Brief descriptions of the areas that are covered in each school or program and a brief statement of the educational philosophy and orientation of the unit.

b. Lists of faculty members, the institutions from which they received their highest degrees, and their areas of interest.

c. Requirements for undergraduate majors and minors and graduate degrees.

d. Additional areas of study (referred to as concentrations, specializations, or emphases).

e. Advice about planning a program of study, and other information relevant to the academic progress and experience of students majoring in fields within each school or program.

f. Courses offered.

UNDERGRADUATE AND GRADUATE DEGREES

Degree Title	Degree [1]
Aerospace Engineering	B.S.
African-American Studies	B.A.
Anthropology	B.A.
Applied Ecology	B.S.
Art History	B.A.
Arts Interdisciplinary	B.A.
Asian American Studies	B.A.
Biochemistry and Molecular Biology	B.S.
Biological Sciences	B.S., M.S.[2], Ph.D.
Business Administration	M.B.A.
Chemical and Biochemical Engineering	M.S., Ph.D.
Chemical Engineering	B.S.
Chemistry	B.S., M.S.[3, 4], Ph.D.
Chinese Language and Literature	B.A.
Civil Engineering	B.S., M.S., Ph.D.
Classical Civilization	B.A.
Classics	B.A., M.A.[3], Ph.D.[5]
Comparative Literature	B.A., M.A.[3], Ph.D.
Computer Engineering	B.S.
Criminology, Law and Society	B.A., Ph.D.
Dance	B.A., B.F.A., M.F.A.
Drama	B.A., M.F.A.
Drama and Theatre	Ph.D.[6]
Earth and Environmental Sciences	B.S.
Earth System Science	M.S.[3], Ph.D.
East Asian Cultures	B.A.
East Asian Languages and Literatures	M.A.[3], Ph.D.
Economics	B.A., M.A.[3], Ph.D.
Education	Credential Programs
Educational Administration	Ed.D.[7]
Educational Technology Leadership	M.A.
Electrical and Computer Engineering	M.S., Ph.D.
Electrical Engineering	B.S.
Engineering	B.S., M.S., Ph.D.
English	B.A., M.A.[3], M.F.A., Ph.D.
Environmental Analysis and Design	B.A.
Environmental Engineering	B.S.
Environmental Health Science and Policy	M.S., Ph.D.
Environmental Toxicology	M.S., Ph.D.
Film Studies	B.A.
French	B.A., M.A.[3], Ph.D.
Genetic Counseling	M.S.
German	B.A., M.A.[3], 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., Ph.D.
International Studies	B.A.
Japanese Language and Literature	B.A.
Linguistics	B.A.
Management	Ph.D.
Mathematics	B.S., M.S.[4], 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.
Neurobiology	B.S.
Pharmacology and Toxicology	M.S.[3], Ph.D.
Philosophy	B.A., M.A.[3], Ph.D.
Physics	B.S., M.S.[3], Ph.D.
Political Science	B.A., Ph.D.
Psychology	B.A., Ph.D.
Psychology and Social Behavior	B.A.
Radiological Sciences	M.S.[8], Ph.D.[8]
Social Ecology	B.A., M.A., Ph.D.
Social Science	B.A., M.A.[9], 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.
Visual Studies	M.A.[3], Ph.D.
Women's Studies	B.A.

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

[2] Emphasis at the graduate level is on study leading to the Ph.D. degree; the M.S. degree may be awarded to Ph.D. students after fulfillment of the appropriate requirements. However, students may apply directly to the M.S. concentration in Biotechnology.

[3] 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.

[4] 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.

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

[6] UCI and UCSD joint program.

[7] UCI and UCLA joint program.

[8] Contact the Department for information about this program before applying.

[9] Emphasis at the graduate level is on study leading to the Ph.D. degree; the M.A. degree may be awarded to Ph.D. students after fulfillment of the appropriate requirements. However, students may apply directly to the M.A. program in Social Science with a concentration in Demographic and Social Analysis; the M.A. program in Social Science with a concentration in Mathematical Behavioral Sciences is also available to applicants who are in a Ph.D. program at another institution.

NOTE: Although UCI is authorized to grant the following degrees, admission to these programs is not available: Business Administration, M.B.P.A.; Comparative Culture, B.A., M.A., M.A.T., Ph.D.; Fine Arts, M.F.A.; Geography, B.A.; Public Administration, M.B.P.A., M.P.A.; Russian, B.A.

Course Listings

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

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

The (4) or (4-4-4) designation following the course title indicates the quarter unit credits toward graduation. Some courses give other than four units of credit; for example, two, five, or a range 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 description. However, courses which have been approved to fulfill the upper-division writing requirement are *not* designated in this *Catalogue.* Rather, they are designated in the quarterly *Schedule of Classes* with a W following the number. Students should refer to the *Schedule of Classes* for a complete listing of approved upper-division writing courses.

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.

Honors programs for qualified upper-division students are available within the following majors: Anthropology; Applied Ecology; Chemistry; Criminology, Law and Society; Drama; Economics; Environmental Analysis and Design; Information and Computer Science; International Studies; Linguistics; Physics; Political Science; Psychology; Psychology and Social Behavior; Social Sciences; and Sociology. Additionally, the **Humanities Honors Program** is open to qualified upper-division students regardless of major, and the **Campuswide Honors Program** is available to selected high-achieving students in all majors from their freshman through senior years. **Excellence in Research Programs** are available to Biological Sciences, Engineering, and Psychology majors.

SCHOOL OF THE ARTS

Majors:
- Arts Interdisciplinary
- Dance
  - Specializations (B.F.A. only):
    - Choreography
    - Performance
- Drama
- Music
  - Emphases (B.A. only):
    - Analysis
    - History
    - Jazz
    - Performance
  - Specializations (B. Mus. only):
    - Bassoon
    - Clarinet
    - Composition
    - Contrabass
    - Flute
    - French Horn
    - Harp
    - Jazz Instrumental
    - Lute and Guitar
    - Oboe
    - Percussion
    - Piano
    - Saxophone
    - Trombone
    - Trumpet
    - Tuba
    - Viola
    - Violin
    - Violoncello
    - Voice
  - Special String Performance
- Studio Art

Minors:
- Digital Arts
- Drama
- 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:
- Biochemistry and Molecular Biology
- Biological Sciences
  - Specializations:
    - Cell Biology
    - Developmental Biology
    - Ecology
    - Evolution
    - Microbiology
    - Molecular Biology and Biochemistry
    - Neurosciences
    - Physiology
    - Plant Sciences
- Neurobiology
- Applied Ecology (offered jointly with the School of Social Ecology)

DEPARTMENT OF EDUCATION

Minor: Educational Studies

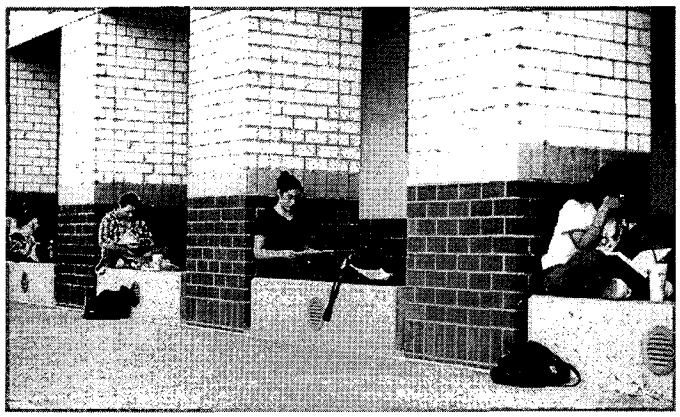
HENRY SAMUELI SCHOOL OF ENGINEERING

Majors:
- Aerospace Engineering
- Chemical Engineering
  - Specializations:
    - Biochemical Engineering
    - Environmental Engineering
    - Materials Science
- Civil Engineering
  - Specializations:
    - General Civil Engineering
    - Environmental Engineering
    - Structural Engineering
    - Transportation Information and Control Systems
    - Water Resource Engineering
- Computer Engineering
- Electrical Engineering
  - Specializations:
    - Electro-optics and Solid-State Devices
    - 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

Minor: Biomedical Engineering

SCHOOL OF HUMANITIES

Majors:
- African-American Studies
- Asian American Studies
- 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:
    - Linguistics
    - Literature
- History
- Humanities (Interdisciplinary)
- Japanese Language and Literature
- Philosophy
- Spanish
  - Emphases:
    - Linguistics
    - Literature and Culture
    - Teaching Language and Culture
- Women's Studies

Minors:
- African-American Studies
- Asian American Studies
- Art History
- Chinese Language and Literature
- Classical Civilization
- Comparative Literature
- English
- Film Studies
- French
- German
- Greek
- History
- Humanities and Law
- Italian
- Japanese Language and Literature
- Latin
- Latin American Studies
- Philosophy
- Portuguese
- Russian Studies
- Spanish
- Women's Studies

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

Minor: Information and Computer Science

INTERDISCIPLINARY STUDIES

Minors:
- Asian Studies
- Chicano/Latino Studies
- Conflict Resolution
- Global Sustainability
- History and Philosophy of Science
- Native American Studies
- Religious Studies

GRADUATE SCHOOL OF MANAGEMENT

Minor: Management
3-2 Program: Available to outstanding undergraduates in all majors*

* School of Engineering majors should contact their academic counselor.

SCHOOL OF PHYSICAL SCIENCES

Majors:
- Chemistry
  - Concentrations:
    - Biochemistry
    - Chemistry Education
- Earth and Environmental Sciences
- Mathematics
  - Concentration:
    - Mathematics for Economics
  - Specializations:
    - Applied and Computational Mathematics
    - Mathematics for High School Teaching
    - Statistics
- Physics
  - Concentrations:
    - Applied Physics
    - Biomedical Physics
    - Computational Physics
    - Philosophy of Physics
    - Physics Education
  - Specialization:
    - Astrophysics

Minors:
- Earth and Atmospheric Sciences
- 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
- Economics
- International Studies
- Linguistics
- Political Science
- Psychology
- Social Science
  - Specializations:
    - Multicultural Studies
    - Public and Community Service
    - Research and Analytical Methods
    - Social Studies
- Sociology

Minors:
- Anthropology
- Linguistics
- Political Science
- Psychology
- Sociology

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

Accompanying
Acting
Choral Conducting
Composition and Technology
Dance
Design and Stage Management
Directing
Drama
Drama and Theatre
Guitar/Lute Performance
Instrumental Performance
Jazz Composition
Jazz Instrumental Performance
Piano Performance
Studio Art
Vocal Performance

School of Biological Sciences

Anatomy and Neurobiology[1, 2]
Biological Chemistry[1, 2]
Biological Sciences
Biotechnology
Developmental and Cell Biology[2]
Ecology and Evolutionary Biology
Microbiology and Molecular Genetics1, [2]
Molecular Biology and Biochemistry[2]
Neurobiology and Behavior
Physiology and Biophysics1, [2]
Protein Engineering Science[3]

Department of Education

Educational Administration
Educational Technology Leadership
Multiple Subject Instruction (elementary)[4]
Single Subject Instruction (secondary)[4]
Bilingual Crosscultural Language and Academic Development (BCLAD) Emphasis in Spanish[4]
Crosscultural Language and Academic Development (CLAD) Emphasis[4]
Preliminary Administrative Services[4]
Professional Clear Administrative Services[4]

Henry Samueli School of Engineering

Biomedical Engineering
Chemical and Biochemical Engineering
Civil Engineering
Computer Networks and Distributed Computing
Computer Systems and Software
Electrical Engineering
Environmental Engineering
Materials Science and Engineering
Mechanical and Aerospace Engineering
Protein Engineering Science[3]

School of Humanities

Asian American Studies[5]
Art History[6]
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
Feminist Studies[7]
Film Studies[6]
French
German
Greek
History
Humanities
Japanese Language and Literature
Latin
Philosophy
Spanish
Spanish Literature
Spanish-American Literature
Visual Studies

Department of Information and Computer Science

Artificial Intelligence
Computer Algorithms and Data Structures
Computer Software
Computer Systems and Networks
Computer Systems Design
Computing, Organizations, Policy, and Society
Embedded Systems
Informatics in Biology and Medicine
Information Access and Management
Information and Computer Science
Knowledge Discovery in Data

Interdisciplinary Program

Transportation Science

Graduate School of Management

Business Administration
Management

School of Physical Sciences

Chemical and Materials Physics
Chemistry
Earth System Science
Mathematics
Physics
Protein Engineering Science[3]

School of Social Ecology

Criminology, Law and Society
Demographic and Social Analysis
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
Demographics and Social Analysis
Economics
Linguistics
Logic and Philosophy of Science
Mathematical Behavioral Sciences
Political Psychology
Political Science
Psychology
Public Choice
Social Networks
Social Science
Sociology and Social Relations
Transportation Economics
Transportation Science

College of Medicine

Anatomy and Neurobiology[1, 2]
Biological Chemistry[1, 2]
Environmental Toxicology
Genetic Counseling
Medical Residency Programs
Medical Scientist Program
Medicine
Medicine/Business Administration[8]
Microbiology and Molecular Genetics[1, 2]
Pharmacology and Toxicology
Physiology and Biophysics[1, 2]
Radiological Sciences[9]

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[1] School of Biological Sciences and College of Medicine joint program.

[2] Combined program in Molecular Biology, Genetics, and Biochemistry.

[3] Available in conjunction with the Ph.D. programs in Biological Sciences, Chemistry, and Engineering.

[4] Credential program.

[5] Available in conjunction with selected graduate programs. Contact Asian American Studies for information.

[6] Graduate program in Visual Studies.

[7] Available in conjunction with selected graduate programs. See the Women's Studies section of the *Catalogue* for information.

[8] College of Medicine and Graduate School of Management joint program

[9] Contact the Department for information about this program before applying.

MAJORS AND CAREERS

Choosing a Major

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

In preparation for choosing a major, students need to familiarize themselves as much as possible with UCI and its academic programs. Entering students are exposed to a wide range of areas of study, and it is not unusual for students to become enthusiastic about academic disciplines previously unfamiliar to them. At UCI a number of traditionally separate academic disciplines have strong interrelationships, so that the academic environment is influenced by broad interactions among disciplines. As a complement to classroom study, UCI encourages its students to become involved in a variety of educational experiences such as independent study, laboratory research, field study, writing workshops, computing, and arts productions. Such experiences can help students identify additional areas of interest.

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

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

Each school 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 or even to identify their interests with a particular school. Such students participate in the Undecided/Undeclared Advising Program which is administered by the Division of Undergraduate Education. The goal of this program is to help students make the best informed and most rational choice of a major that is possible. All students at UCI are required to choose their major by the time they reach junior status.

To make a good decision about 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 the Undecided/Undeclared Advising Program receive quarterly individualized faculty and staff counseling that helps them explore the variety of course offerings on campus, become more aware of their own interests and abilities, formulate sound educational goals, and learn how to prepare for graduate education and/or possible careers.

To assist students in choosing a major, the program 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 such as electronic technology including the World Wide Web and electronic mail, and to introduce students to each of the schools and majors offered. In addition, students learn about research and career opportunities within different disciplines.

Call (949) 824-6987 for more information.

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 exploration of UCI's undergraduate majors and career options with a focus on decision-making skills.

University Studies 3 Freshman Mini-Seminar (1). Designed for freshmen as an introduction to scholarly inquiry. Each section is taught by a faculty member from one of the academic disciplines and presents interesting and challenging topics representing the instructor's interest. Students participate in discussions, presentations, and projects.

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

University Studies 40 Personal Success and Global Perspective (0). Furthers students' understanding of crucial personal and global issues and develops skills necessary for success in applying for prestigious scholarships and in graduate/professional studies. Seminar course with oral presentations, discussions, and written statements receiving particular emphasis. Two units of workload credit only. Prerequisites: minimum 3.7 GPA, sophomore standing; must submit writing sample and receive consent of instructor.

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

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

University Studies 192 Group Project for Discussion Leaders (4). For discussion leaders for University Studies 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.

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

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

Preparation for Graduate or Professional Study

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

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 academic excellence. A good record in physics or classics, for example, will be preferred over a mediocre record in history or political science. Most law schools give equal preference to students from all academic disciplines. Courses that help develop writing and analytical skills (logic, writing, mathematics, research methods, and statistics, for example) build skills that are the key to doing well on the Law School Admissions Test (LSAT) and succeeding in law school and the legal profession.

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

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

MEDICINE AND OTHER HEALTH-RELATED SCIENCES

Although health science educators strongly recommend that students obtain a bachelor's degree prior to admission to the health sciences, there is no preferred major. Many UCI students who plan to enter the health professions major in Biological Sciences because much of the basic course work for that major is also required for medical school admission; however, students may major in any academic field as long as they also take the courses required by professional health science schools. The minimum amount of undergraduate preparation required 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, as well as one semester (or two quarters) of biochemistry. Courses in cell or molecular biology, genetics, developmental physiology or comparative anatomy, vertebrate embryology, and computer science are recommended. In addition, some health sciences schools have certain nonscience course requirements or recommendations, 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: 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 clinical 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 health science school, or should one decide to pursue instead one of the expanding number of health-related programs now available.

BUSINESS/MANAGEMENT

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

Although UCI does not offer 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 and may be helpful to students in determining whether they wish to pursue a career in business or management or undertake graduate-level study in management.

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

For admission purposes, the majority of graduate schools of business look at five areas: grades, scores on the Graduate Management Admission Test (GMAT), the applicant's statement of purpose, in-depth letters of recommendation, 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

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

Arts Career Areas

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

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

Biological Sciences Career Areas

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

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

Engineering Career Areas

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

These are some areas for employment available to UCI engineering graduates. Career paths typically involve one or more of the following: design, research and development, manufacturing or construction, operations, consulting, applications and sales, management, or teaching. At UCI they will have had the choice of Aerospace, 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 obtain advanced degrees from UCI or other universities, and almost all engage in continuing education to keep abreast of advances in technology. Many Engineering graduates build on their engineering background and enter graduate programs to obtain degrees in the fields of administration, law, medicine, physics, or mathematics.

Humanities Career Areas

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

Diverse career fields available to Humanities graduates include entry-level positions in both the public and private sectors or professional-level opportunities combining the degree with further specialization. Humanities graduates may also elect to enter professional 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, Computer-Aided Design, Computer Animation, Computer Architecture, Computer Networks, Computer Simulation, Computer Systems Design, Databases, Information Systems Design and Consulting, Management Information Systems, Multimedia Applications, Parallel and Distributed Systems, Embedded Systems, Software Design and Development, Software Management and Maintenance, Supercomputing, Systems Administration, Systems Analysis and Design, Systems Programming.

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

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

The UCI Career Center features an extensive library and maintains lists of current job openings and internship opportunities.

Social Ecology Career Areas

Administration, Air Quality Control, Architecture, Biostatistics, Clinical Psychology, Corrections/Probation, Counseling, Education Support Services, Environmental Design, Environmental Planning and Consulting, Epidemiology, Government Service, Health Service, Hospital Administration, Housing Development, Law, Management/Administration, Mental Health, Program Coordination, Psychology, Public Health Research, Public Relations, Real Estate/Development, Research and Research Design, Social Service, Teaching, Urban Planning, 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, Correction/Probation, Counseling, Environmental Analysis, Finance, Foreign Service, Government Service, Health Services, Human Services, Industrial Relations, International Affairs, Labor Relations, Law, Library Science, Management/Administration, Marketing, Personnel, Psychology, Public Relations, Publishing, Real Estate, Research, Sales, Statistical Analysis, Teaching, Writing.

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

SPECIAL PROGRAMS

University Program for High School Scholars

The University Program for High School Scholars (UPHSS) is an early-admission program for exceptionally talented high school seniors who wish to begin university-level work, and for whom UCI is a serious college choice. UPHSS is particularly valuable for students who are intellectually ready for the academic challenges of university work, as it provides access to UCI's outstanding faculty, considerable resources, and university life. Through participation in UPHSS, highly motivated students may enroll concurrently in UCI and begin accumulating college credit while completing their senior year in high school. Credit earned may be transferred to any University of California campus and may apply at other colleges and universities as well. Participating students are granted full access to the campus libraries, laboratories, studios, and recreational facilities.

A High School Scholar continues to place primary academic and social focus on high school *and* is an officially registered UCI student enrolled in the same courses and evaluated on the same basis as full-time undergraduates. Students may register for the fall, winter, and/or spring quarters, taking one or two courses per term. Enrollment is available for any course for which the UPHSS student has met the necessary prerequisites and restrictions, recognizing that certain courses, particularly those in mathematics, languages other than English, and music, may require a placement examination and possibly an interview with the course instructor. Participation in UPHSS is intended to supplement rather than replace a student's high school curriculum, providing classes which are either unavailable or more advanced than those offered in high school.

UCI makes every effort to encourage and facilitate the participation of all qualified students who have demonstrated the highest academic achievement and can contribute to the strength and diversity of the campus community. Additional information is available in the Undergraduate Admissions section of this *Catalogue* and from the UPHSS coordinator in the Office of Admissions and Relations with Schools, telephone (949) 824-6703. After matriculation, information is available from the Honors Center; telephone (949) 824-5461.

An alternative to UPHSS is University Extension's Access UCI Program, which allows highly qualified high school seniors to enroll in regular UCI courses without formal admission to the University. For information, call (949) 824-1010.

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. Qualification for the Educational Opportunity Program (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.

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 processes, 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); telephone (949) 824-6234. SAAS offers 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. Santa Ana Networks includes activities that focus on increasing the educational achievement of at-risk youth. The program is founded 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 Santa Ana 2000, a business/community/citywide partnership, and other successful partnership efforts.

Summer Scholars Transfer Institute, a collaborative Santa Ana 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.

The Orange County Transfer Consortium partners the leadership of UCI with administrators at the nine Orange County community colleges to improve transfer rates to the University of California. Programs serve potential and current transfer students to UCI with information, support, and counseling services.

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); Upward Bound; High School Puente Program; and GEAR UP.

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. Other programs assist students with mathematics skills and advanced placement courses.

The School-Centered 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 and interdisciplinary initiatives for curriculum reform, professional development, and student academic services.

For additional information about the Center for Educational Partnership's programs and services, telephone (949) 824-7482.

In addition, the Center for Educational Partnerships is 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) 776-5394 or (949) 824-2363 for information.

The McNair/Star Program, funded by the State Department of Education, aims to increase the number of students who pursue doctoral degrees in the same disciplines available in CAMP: engineering, computer sciences, biological and physical sciences. In addition, the program includes those social and behavioral sciences in which qualitative and statistical methods are used. Call (949) 824-8490 for information.

Student Academic Advancement Services

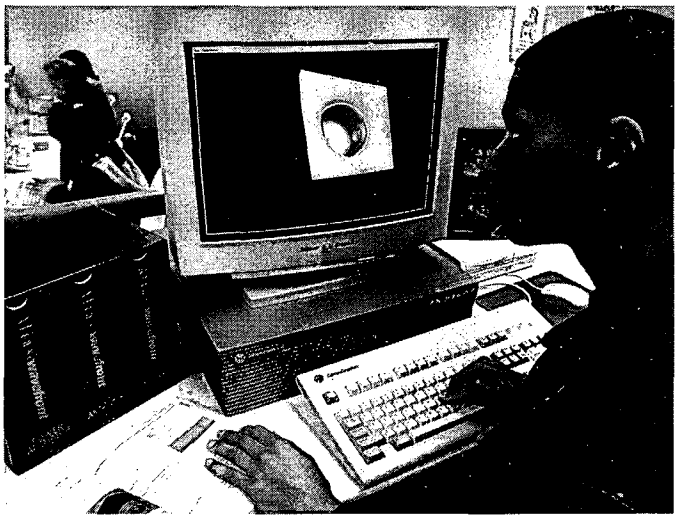
Student Academic Advancement Services (SAAS), a unit of the Division of Undergraduate Education, provides support services to students who are first-generation college students or low-income students, as well as disabled students (those with physical and/or learning disabilities). The goal of SAAS is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

Graduate Diversity Program

The University of California recently reaffirmed that a diverse student and faculty population is integral to academic excellence and is critical to promoting the lively intellectual exchange and the variety of ideas and perspectives that are essential to advanced scholarly research. The University remains committed to expand outreach, recruitment, and retention efforts. Through the Graduate Diversity Program, steps are taken to increase the participation of diverse groups who may be disadvantaged in graduate education in the United States. See the Research and Graduate Studies section of the *Catalogue* for additional information.

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. See the College of Medicine section for additional information.



The Digital Arts Laboratory, School of the Arts

EXPENSES AND FEES

Estimated Expenses

The range of estimated nine-month expenses, including fees, for students attending UCI during the 2000–2001 academic year are shown below; fees are subject to change.

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.

Student Status	Living Arrangement	Estimated Nine-Month Expenses [1]
Undergraduate	On campus	$ 14,350
	Off campus	14,400
	At home	10,185
Graduate	On campus	15,110
	Off campus	18,775
	At home	11,900
M.B.A. (new students)		
	On campus	23,030
	Off campus	24,980
	At home	18,105
Fully Employed Program		29,855
Executive Program		45,085
Health Care Executive Program		33,650
First-Year Medical [2]		
(10 months)	On campus	22,240
	Off campus	25,946
	At home	18,345

[1] 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.

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

Fees

Undergraduate Student Fees for Academic Year 2000–2001 [1]	Resident	Nonresident
University Registration Fee[2]	$ 713.00	$ 713.00
Educational Fee[2]	2,716.00	3,086.00
Associated Students Fee	54.00	54.00
UCI Student Center Fee	142.50	142.50
Bren Events Center Fee	69.00	69.00
Recreation Center Fee	264.00	264.00
Campus Spirit Fee	99.00	99.00
Nonresident Tuition[2]	—	10,244.00
Total	$ 4,057.50	$ 14,671.50

Graduate and Medical Student Fees for Academic Year 2000–2001 [1, 4]	Resident	Nonresident
University Registration Fee[2]	$ 713.00	$ 713.00
Educational Fee[2, 3]	2,896.00	3,086.00
Associated Graduate Students Fee[5]	27.00	27.00
UCI Student Center Fee	142.50	142.50
Bren Events Center Fee	69.00	69.00
Recreation Center Fee	264.00	264.00
Graduate Student Health Insurance Fee	1,140.00	1,140.00
Nonresident Tuition[2]	—	10,244.00
Total	$ 5,251.50	$ 15,685.50

[1] Student fees are based on three quarters of attendance. Second- and third-year medical students attend four quarters; summer quarter fees of $1,280.50 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.*

[2] Subject to change without notice by the Regents of the University of California.

[3] The Educational Fee is $3,086 for Graduate School of Management and medical students.

[4] 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 $5,376 for M.D. students who enroll fall 1997 or later. Students who enrolled prior to these dates should consult the *Schedule of Classes* for their fee level. All medical students pay an additional fee of $61 for Medical Student Disability Insurance.

[5] 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 (949) 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 $906 for the fall quarter and $905 per quarter for the winter and spring quarters for full-time resident undergraduate students. The fee is $966 for the fall quarter and $965 per quarter for the winter and spring quarters for full-time resident graduate students. The fee is $1,029 per quarter for the fall and winter quarters and $1,028 for the spring quarter for full-time nonresident undergraduate and full-time nonresident graduate students, and for Graduate School of Management and medical 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 $18 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 **Recreation Center Fee** is $88 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 Student Recreation Center and Athletics facilities improvements.

The **Campus Spirit Fee** is $33 per quarter. The fee is required of all undergraduate students regardless of the number of courses taken or units carried. The fee is used to support Athletics and Campus Spirit Programs.

The **Graduate Student Health Insurance Fee** is $1,140 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 or units carried. The fee is used to provide graduate and medical students with health insurance. If students provide evidence of comparable coverage from another source, participation in the mandatory plan may be waived.

The **International Student Health Insurance Fee** is $1,140 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 1997 or later, the fee is $1,793 for the fall quarter, $1,792 for the winter quarter, and $1,791 for the spring quarter. M.B.A. and M.D. students who enrolled prior to these dates 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.

Reduced-Fee Part-Time Study Program

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. 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. See the *Schedule of Classes* for more information.

Alan Pattee Scholarship Act

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 is available from the Registrar's Office.

Miscellaneous Fees

Application Fee[1, 2]	$ 40.00
Application Fee for Readmission[1]	40.00
Advancement to Candidacy for Ph.D.	65.00
Duplicate Diploma	22.00
Duplicate Diploma, College of Medicine	75.00
Filing Fee (graduate programs)	119.00
M.B.A. Acceptance of Admissions Deposit[1]	500.00
Special Library Borrowing Privilege (per year, nonrefundable, renewable)	50.00
Transcript of Record (per copy)	5.00
Undergraduate Acceptance of Admission Fee[1] (applied toward University Registration Fee)	100.00
Verification of Student Status (per copy)	3.00

[1] Nonrefundable in all cases.

[2] 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.

Service Charges

Changes in Class Enrollment after Announced Dates (each transaction)	$ 3.00
Credit by Examination (each petition)	5.00
Late Payment of Registration Fees	25.00/50.00
Late Enrollment in Classes	50.00
Returned Check Collection	10.00
OCTA Bus Coupon Book (10 rides)[1]	5.00
OCTA Bus Passes for students (monthly)[1]	13.00
Parking Fees[2]	
Student preferred, annual purchase only[3]	387.00
Student general, quarterly	81.00
annual[3]	216.00
Student resident, quarterly	81.00
annual[3]	216.00
System of Interactive Guidance (SIGI) Fee	10.00

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

[1] Sold through the UCI Parking and Transportation Services Office. Price subject to change without notice.

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

[3] 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 the Nonresident Tuition Fee. The residence determination date is the day instruction begins at the last of the University of California campuses to open for the quarter, and for schools on the semester system, the day instruction begins for the semester.

Laws Governing Residence

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

Who Is a Resident?

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

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

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

Residence cannot be derived from a spouse or parents.

Requirements for Financial Independence

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 of the term for which resident classification is requested.
2. Veteran of the U.S. Armed Forces.
3. A ward of the court or both parents are deceased.
4. Has legal dependents other than a spouse.
5. A married graduate student or 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, who can demonstrate self-sufficiency for those years.

NOTE: Financial independence is not a factor in residence status for graduate student instructors, graduate student teaching assistants, research assistants, junior specialists, postgraduate researchers, graduate student researchers, and teaching associates who are employed 49 percent or more of full time in the term for which resident classification is requested.

Establishing Intent to become a California Resident

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

General Rules Applying to Minors

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

Specific Rules Applying to Minors

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

Exemptions from the Nonresident Tuition Fee

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

1. **Member of the Military.** A student, on active duty as a member of the United States military stationed in California, 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, stepchild, 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 university 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 a deceased public law enforcement or fire suppression employee, who was a California resident and was killed in the course of law enforcement or fire suppression duties.
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 domicile in California and returns to his or her former home during noninstructional periods, the student's presence in California will be presumed to be solely for educational purposes and only convincing evidence to the contrary will rebut this presumption. *Students who are in the State of California solely for educational purposes will not be classified as residents for tuition purposes regardless of their length of stay in California.*

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

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

Change in Resident Classification

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

Incorrect Classification

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

Inquiries and Appeals

Inquiries regarding residence requirements, determination, and/or recognized exceptions should be directed to the University of California, Irvine, Residence Deputy, Registrar's Office, 215 Administration Building, Irvine, CA 92697-4975, telephone (949) 824-6129, or to the Paralegal, Residence Matters, 111 Franklin Street, 8th Floor, Oakland, CA 94607-5200. *No other University personnel are authorized to supply information relative to residence requirements for tuition fee purposes.*

This summary is *not* a complete explanation of the law regarding residence classification. 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 Paralegal within 45 days of notification of the Residence Deputy's final decision.

Fee Refunds

Student Fee Refunds

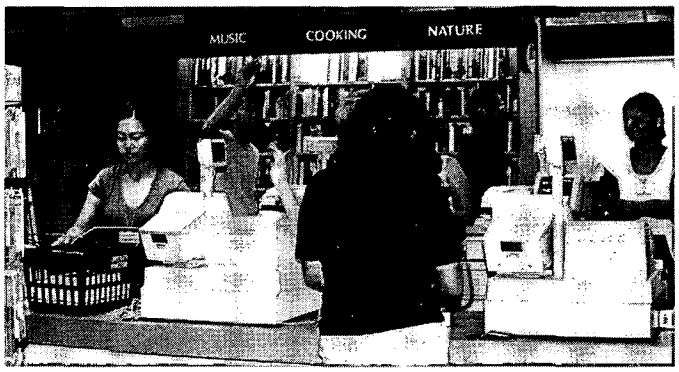
Students who pay fees for a regular academic quarter and then decide to withdraw from the University must submit a Cancellation/Withdrawal form to the Registrar's Office after obtaining the signatures of their academic dean and, for undergraduate students, the University Ombudsman. Medical students must 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 is used in determining the percentage of fees to be refunded. This date is normally the date that the student submits the form to the appropriate Dean/Ombudsman for approval and is designated by that Dean/Ombudsman. It is presumed that no University services will be provided to the student after that date. Registration fees are refunded as follows.

Students should bear in mind that the "first day of the quarter" often is several days prior to the "first day of instruction."

New Undergraduate Students. Through the first day of instruction, fees are refunded in full, except for: (1) the $100 Undergraduate Acceptance of Admission Fee, and (2) the International Student Health Insurance Fee, if applicable. (The International Student Health Insurance Fee is refunded only if the Cancellation/Withdrawal form is submitted *prior to the first day of the quarter.)*

After the first day of instruction, the refund of the Registration Fee, Educational Fee, Associated Students Fee, UCI Student Center Fee, Bren Events Center Fee, Recreation Center Fee, Campus Spirit Fee, and Nonresident Tuition Fee (if applicable) is prorated as shown in the chart.



Continuing and Returning Undergraduate and New, Continuing, and Returning Graduate Students. Through the first day of instruction, fees are refunded in full, except for: (1) a $10 service charge, and (2) the Graduate Student Health Insurance Fee and International Student Health Insurance Fee, if applicable (the Graduate Student Health Insurance Fee and International Student Health Insurance Fee are refunded only if the Cancellation/Withdrawal form is submitted *prior to the first day of the quarter.)*

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, Recreation Center Fee, Campus Spirit 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 two 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 (subject to change). Students withdrawing who received loans must schedule an exit interview with the Financial Services Office at (949) 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 *2000–2001 Financial Aid Handbook.* The handbook is mailed to entering students in January and is available to continuing students in the Financial Aid Office, 102 Administration Building; telephone (949) 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 the end of December. Students are encouraged to apply as early as possible after January 1. The priority deadline to file the FAFSA/Renewal Application for loans, work-study, and most grants is March 2. All other supporting documentation should be submitted to the Financial Aid Office by May 1 for priority consideration.

The University expects the student and the parent (or spouse) to contribute toward the educational costs to the extent possible. For dependent students, an analysis of the FAFSA and supporting documents 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 eligible California residents are required to apply for a Cal Grant. The application deadline for Cal Grants is March 2 for the following academic year.

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

Eligibility Requirements

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

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

UCI POLICY ON SATISFACTORY ACADEMIC PROGRESS FOR FINANCIAL AID

Undergraduate and Graduate Students

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

Satisfactory Academic Progress Requirements for Financial Aid

The following requirements for satisfactory academic progress for receipt of financial aid apply to all applicants for any financial aid awards administered by the UCI 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: academic performance requirements to pass course.*

* 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	995	995
2	796	1,791
3	1,390	3,180
4	1,040	4,221

Medical Students—Extended Curriculum Clock-Hours:

Year	End of Year Total	Cumulative Total
1	597	597
2	597	1,194
3	597	1,791
4	1,390	3,180
5	1,040	4,221

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

2. 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.

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

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/quintile during which the student took the course. If the student fails to meet the requirements for removing the I and the I becomes a grade of F, the clock-hours for that course will be deleted retroactively from the student's satisfactory academic progress record.

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

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

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

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

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

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

      ii. Enrolled in less than six units per quarter. Students are placed on Satisfactory Academic Progress probation for the remainder of the academic year. They are able to receive campus-based financial aid funds for that academic year but the unit deficiency must be cleared by the end of spring quarter 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 and/or GPA deficiencies will be required to make up the deficiency prior to receiving any future financial aid funds, including funds that would be used for payment of fees.

3. Quarter limits of eligibility. At the end of each quarter students will be notified by the 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 (available from the Financial Aid Office); 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; and any other requested documents. Undergraduate and graduate students may seek the assistance of the University Ombudsman in the preparation of appeals. Medical students may seek the assistance of the Associate Dean of Student and Resident Affairs in the preparation of appeals. They may also be required to submit a degree check, course plan, or letter from their dean.

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

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

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

Scholarships

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

scholarships have stipends which range from $250 to full in-State fees; or, in the case of Regents' Scholarships, may 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 Advisory Panel on Undergraduate Scholarships, Honors, and Financial Aid. Information about the Alumni Scholarship is available in the *UC Application for Undergraduate Admission and Scholarships.*

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 transfer from community 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 3.25. The honorarium 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 $3,125 for the 1999–2000 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 1999–2000 Cal Grant A awards paid up to $3,429. To be eligible, applicants must be California residents and demonstrate financial need. Students must use the FAFSA and GPA Verification Form to apply for Cal Grant A. The filing deadline for new applicants is March 2 for the following year.

Cal Grant B is a State-funded grant program which provided, in 1999–2000, awards up to a maximum of $1,410 during the student's first year and $1,410 plus $3,429 toward fees during subsequent years. To be eligible, applicants must be California residents, demonstrate financial need, and be entering college or not have completed more than one quarter of college work. Students must use the FAFSA and GPA Verification Form to apply for Cal Grant B. The filing deadline for new applicants is March 2 for the following year. *NOTE: Students may not receive both Cal Grant A and Cal Grant B. If offered both, the Financial Aid Office recommends taking Cal Grant B over Cal Grant A.*

Cal Grant T is a State-funded grant program which currently provides awards to be applied to the payment of University fees. In 1999–2000 Cal Grant T awards paid up to $3,609. To be eligible, applicants must be California residents, demonstrate financial need, and be accepted and enrolled in the teacher credential program. Students must use the FAFSA and GPA Verification Form to apply for Cal Grant T. The filing deadline for new applicants is March 2 for the following year.

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 and funding levels.

Loans

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

A student's loan responsibility, prior to acceptance of the loan, is to understand the terms of the loan. After accepting the loan, the recipient must repay the loan in accordance with the repayment schedule, advise the Financial Aid 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 nine months* after the borrower ceases to be enrolled or is enrolled less than half-time, and repayment must be completed within a 10-year period.

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

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

William D. Ford Direct Loan Program

Subsidized William D. Ford Federal Direct Loan (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 student may borrow is: $2,625, freshmen; $3,500, sophomores; $5,500, juniors and seniors; $8,500, graduate and medical students. Both a guarantee and origination fee will be deducted from the amount of the loan prior to issuing the check.

Interest rates: The federal government pays interest during the deferment period for Subsidized Direct Loans. Interest rates are variable, adjusted annually, for loans to new borrowers with first disbursements on or after October 1, 1998, and before July 1, 2003, based on 91-day Treasury Bill plus 1.7 percent during in-school, grace, and deferment periods; and 2.3 percent during repayment, capped at 8.25 percent. For loans made to borrowers on or after October 1, 1992, but prior to October 1, 1998, interest rates are based on 91-day Treasury Bill plus 3.10 percent, capped at 8.25 percent. Borrowers will be charged a 3 percent origination fee.

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 Loans have the same terms and conditions as the Federal Direct Loan, including the aggregate loan limits; interest rate, and repayment. During an academic year the maximum a dependent student may borrow is $2,625, freshman; $3,500, sophomore; $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. These maximum amounts include any amount borrowed under the Subsidized William D. Ford Federal Direct Loan program. However, the loan is not based on need. Students may borrow an amount equal to the cost of attendance less any estimated financial assistance up to the annual loan limits in effect at the time the loan is disbursed. Students must first apply for the Federal Direct Loan prior to consideration for the Unsubsidized Federal Direct Loan. There is no interest subsidy for this loan; students pay the interest charged while enrolled at UCI. Students may receive both subsidized and unsubsidized Federal Direct loans but the total may not exceed the loan limits. Borrowers with both types of loans may have a single repayment schedule.

Interest 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.

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.

Celebrate UCI, the campus' annual open house, features the Wayzgoose Medieval Fair, campus tours, and information sessions.

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 final check disbursement for loan period. 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.

Federal College Work-Study

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

Veterans Work-Study Program is available only to U.S. military veterans and their eligible dependents, and members of the Selected Reserve and National Guard. Positions are limited. Separate applications and detailed information are available from Veterans Services, telephone (949) 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 (949) 824-6761. Medical students should contact the College of Medicine Financial Aid Office, 206 Medical Education Building, telephone (949) 824-6476; see the College of Medicine section for additional information.

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

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 (949) 824-6703; World Wide Web: http://www.reg.uci.edu/UCI/ADMISSIONS/. The Office is open from 8 a.m. to 5 p.m., Monday through Friday.

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

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 completed the last 30 semester units/45 quarter units at a California community college.

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 exceptionally talented high school senior who wishes to begin university-level work. 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 eligibility requirements follow the guidelines set forth in the Master Plan, which specify that the top one-eighth of the State's high school graduates be eligible for admission to the University of California. These requirements, described in detail in the 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.

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

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

SELECTION CRITERIA

UCI seeks to enroll students who have a demonstrated record of academic excellence. The level of performance needed to gain admission varies from year to year depending on the size and the academic quality of the applicant pool and the number of enrollment spaces. All applicants are assessed for evidence of academic achievement and potential. Although the number and type of courses completed, and grades and test scores earned remain important elements in the selection process, UCI recognizes that merit is demonstrated in many forms and can be measured in different ways.

The following criteria are used to select between 50 to 75 percent of the freshmen class:

- Academic grade point average (GPA) calculated on all academic courses completed in the subject areas specified by the University's eligibility requirements. UCI uses a maximum of 8 honors grade points in determining the GPA, and the GPA is not capped at 4.0.
- Scores on the SAT I (or ACT) and three required SAT II Subject Tests.
- The number the college preparatory courses completed and the level of achievement in those courses including: courses completed beyond the minimum subject requirements; University-approved honors courses, e.g., Advanced Placement, International Baccalaureate Higher Level courses, and college courses; and, the quality of the senior-year program.
- Evidence of intellectual or creative achievement or substantial public service. This criterion recognizes extraordinary, sustained achievement in any field of intellectual endeavor, for example, a student who has received significant recognition for literary or scientific accomplishments, a student who has demonstrated a strong commitment to the visual and/or performing arts, or a student who has demonstrated substantial public service in any academic field of study.

The remaining 25 to 50 percent of freshmen will be selected on the basis of academic achievement and potential, as described above, and elements related to the applicants' personal experiences including exceptionally challenging curriculum and outstanding academic and co-curricular accomplishments. Achievements will be considered in the context of the opportunities the student has had, any hardships or unusual circumstances the applicant has faced, and the ways in which the student has responded to these challenges.

Students interested in the Engineering majors and the Information and Computer Science major should be aware of the following provisions.

School of Engineering: Applicants must complete four years of high school mathematics, including at least one year beyond intermediate algebra.

Information and Computer Science: The number of applicants that can be admitted to this major is limited.

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

Noontime concerts at the Student Center are sponsored by the Associated Students of UCI.

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 and on the World Wide Web at http://www.ucop.edu/sas/doorway/home.html. 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 (which includes anatomy, physiology, marine biology, aquatic biology, among others), 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, precalculus (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:
   a. 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*
   b. 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. NOTE: Do not use the score choice option to withhold reporting of SAT II scores. UC considers only a student's highest SAT II scores so there is no advantage to withholding scores.

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. (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 or higher, or at least 1,850 if a nonresident of California, with no score less than 530 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. NOTE: UCI typically does not select students for admission by the examination-alone criteria.

2000–2001 Eligibility Index

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

[1] ACT is scored in intervals of 1 point from a minimum of 1 to a maximum of 36.

[2] SAT I is scored in intervals of 10 points from a minimum of 400 to a maximum of 1,600.

Fall 2001 Eligibility Index

A new eligibility index incorporating SAT II subject test scores will be effective beginning with freshman applicants for fall 2001. The revised index includes high school GPA and SAT I (or ACT) and SAT II test scores. The SAT II is weighted more heavily than the SAT I; however, GPA continues to be the most important factor in the index.

Under the new index, the minimum GPA required for UC eligibility is reduced slightly to 2.80. All students—even those with the highest GPAs—are required to meet minimum test score requirements.

Eligibility Index (effective fall 2001)

A–F GPA	SAT Total	A–F GPA	SAT Total
2.80–2.84	4640	3.20–3.24	3408
2.85–2.89	4384	3.25–3.29	3320
2.90–2.94	4160	3.30–3.34	3248
2.95–2.99	3984	3.35–3.39	3192
3.00–3.04	3840	3.40–3.44	3152
3.05–3.09	3720	3.45–3.49	3128
3.10–3.14	3616	≥ 3.50	3120
3.15–3.19	3512		

SAT Total equals: [SAT I composite] + [2 x (SAT II writing + SAT II math + third SAT II)]. SAT I composite is highest combined mathematics and verbal scores from a single sitting. See table to convert an ACT score to an SAT I composite.

ACT to SAT I Conversion Table

ACT	Equivalent SAT I Score	ACT	Equivalent SAT I Score
36	1600	23	1070
35	1580	22	1030
34	1520	21	990
33	1470	20	950
32	1420	19	910
31	1380	18	870
30	1340	17	830
29	1300	16	780
28	1260	15	740
27	1220	14	680
26	1180	13	620
25	1140	12	560
24	1110	11	500

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

UPHSS is an early-admission program for exceptionally talented high school seniors who wish to begin university-level work, and for whom UCI is a serious college choice. Admission to the program is competitive and limited to the most qualified applicants. Units and grades earned during the program become part of the permanent University of California record; therefore, students must be mindful of academic and extracurricular commitments that may be planned for the senior year.

Upon high school graduation, UPHSS participants are considered University of California students; it is not necessary for participants to apply for admission as freshmen. However, to be eligible to enroll full-time at UCI, UPHSS students must meet all prerequisites for admission to the University, including submission of a final high school transcript and scores from the examinations required for admission.

A UPHSS student who qualifies for admission to full-time status need only complete the UCI change of major petition to enroll. 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.* More information about UPHSS is available from the Office of Admissions and Relations with Schools and high school counselors.

Admission as a Transfer Applicant

The University defines a transfer applicant as a student who has completed high school and who has been a registered student in another college or university or in college-level extension classes other than a summer session immediately following high school graduation. UCI considers a California community college transfer applicant as a student who has completed the last 30 semester units/45 quarter units at a California community college. 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. Priority consideration for admission of advanced-standing applicants is given to junior-level applicants (with a minimum of 60 semester/90 quarter units of transferable credit) from California community colleges and is based upon: (1) GPA in transferable courses; (2) depth of preparation toward general education and major requirements; and (3) participation in academically selective honors courses or programs. Applicants with the strongest academic performance will be the most competitive for admission. Junior transfers from four-year colleges, including other UC campuses, and lower-division transfers will be considered as space permits. Applicants for fall quarter admission must complete required English composition and mathematics courses by the end of the spring term. Applicants for winter or spring quarter must complete required English composition and mathematics courses by summer or fall terms, respectively.

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

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

Transfer applicants to majors in Applied Ecology, Biological Sciences, Chemistry, Earth and Environmental Sciences, Economics, Engineering, Information and Computer Science, Mathematics, and Physics must complete prerequisite courses for the major as specified below.

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

Biological Sciences: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Biological Sciences major. All applicants must complete one year of general chemistry with laboratory.

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

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

Economics: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Economics major. All applicants must complete the following required courses: one-year of microeconomics and macroeconomics theory, and one semester or two quarter courses of approved calculus.

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. Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission. All applicants must complete the following required courses: one year of approved calculus, two courses in calculus-based physics with laboratory for engineering and physics majors, and three additional courses as specified by the major. See the School of Engineering section of this *Catalogue* for information on courses required for each major.

Information and Computer Science: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Information and Computer Science major. All applicants must complete the following required courses: one year of discrete mathematics or calculus, and one year of computer science including a programming course in a modern high-level language such as ADA, C++, Java, Modula-3 (Pascal and C may be used but are not recommended). There is a limit on the number of applicants admitted to the major.

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

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

TRANSFER STUDENT ADMISSION REQUIREMENTS

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

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

The transcript submitted from the last college attended must show, as a minimum, that the student was in good standing and had earned a grade point average of 2.00 or better in all transferable course work.

A transfer applicant 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.
3. 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.
4. Students who were not eligible for admission to the University when they graduated from high school because they did not meet the Scholarship Requirement must:
   a. Complete 60 semester units or 90 quarter units of transferable college credit with a grade point average of at least 2.4 (no more than 14 semester units or 21 quarter units may be taken Pass/Not Pass), **and**
   b. Complete the following course pattern requirement, earning a grade of C or better in each course:

      i. Two transferable college courses (3 semester or 4–5 quarter units each) in English composition; **and**

      ii. One transferable college course (3 semester or 4–5 quarter units) in mathematical concepts and quantitative reasoning; **and**

      iii. Four transferable college courses (3 semester or 4–5 quarter units each) chosen from at least two of the following subject areas: the arts and humanities, the social and behavorial sciences, the physical and biological sciences.

      NOTE: For UCI, in fulfilling items i and ii, the courses in English and mathematics should be completed no later than the following term:

Applicants for:	Courses must be completed by:
Fall	Spring term
Winter	Summer term
Spring	Fall term

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.

Nonresident Admission Requirements

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

NONRESIDENT FRESHMAN APPLICANT

A nonresident freshman applicant must (1) graduate from a regionally or state-accredited high school, or complete an appropriate proficiency examination; (2) complete satisfactorily the "a 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 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.

NONRESIDENT TRANSFER APPLICANT

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

ADMISSION OF INTERNATIONAL STUDENTS

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

International applicants whose native language is other than English will be required to demonstrate their English proficiency. This is most often accomplished by achieving a minimum score of 550 (paper-based) or 213 (computer-based) on the Test of English as a Foreign Language (TOEFL). Arrangements to take the TOEFL may be made by writing directly to TOEFL, Educational Testing Service, P.O. Box 6151, Princeton, NJ 08541-6151, USA; telephone (609) 771-7100; World Wide Web: http://www.toefl.org/. Students must ask 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 UCI Extension. Information is available from English and Certificate Programs for Internationals, UCI Extension, P.O. Box 6050, Irvine, CA 92616-6050; telephone (949) 824-5591.

In addition to achieving a minimum TOEFL score, 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 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 information.

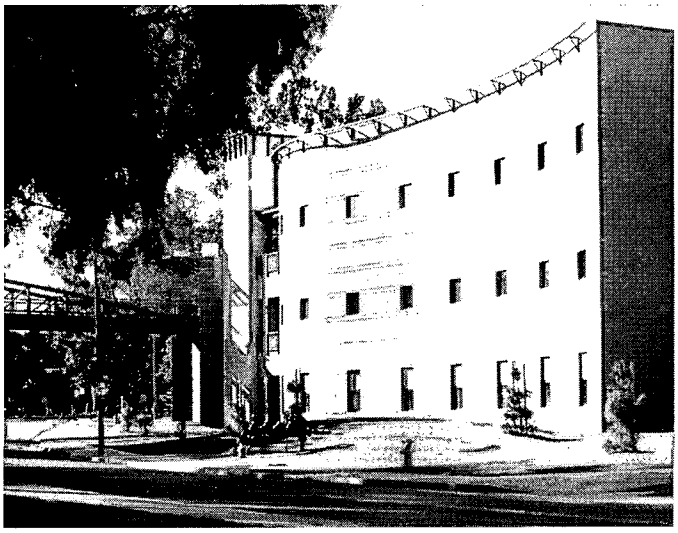
Please direct all inquiries regarding the undergraduate admission of international students to the Office of Admissions and Relations with Schools.

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, 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 is available from the Testing Office (telephone 949-824-6207) and the Office of English as a Second Language (telephone 949-824-6781).

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.



The Music and Media Building, School of the Arts

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; see the School of Humanities section for information.

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 chart on pages 44–45.

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

College Board Advanced Placement

Advanced Placement Examination	AP Score	Unit Credit	Credit Allowed Toward Degree
Art			
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[1]			
Drawing	3, 4, or 5	8	Elective credit only.
General Portfolio	3, 4, or 5	8	Elective credit only.
Biology	3, 4, or 5 (Non-Biological Sciences Majors)	8	One course toward category II of the UCI breadth requirement.
	3 (Biological Sciences Majors)	8	Elective credit only.
	4 or 5	8	Elective credit only.
Chemistry	3	8	Elective credit only.
	4 or 5	8	Chemistry 1A plus 4 units of elective credit. (Chemistry 1A/1LA plus 3 units of elective credit for School of Engineering majors.)
Computer Science[2]			
A Exam	3	2	Elective credit only.
	4 or 5	2	Engineering E10, CEE10, ECE10, MAE10, or ICS 21.
AB Exam	3	4	ICS 21.[3]
	4	4	Engineering E10, CEE10, ECE10, MAE10, or ICS 21.[3] Satisfies category V of the UCI breadth requirement
	5	4	ICS 21 and 22; or Engineering E10, CEE10, ECE10, or MAE10. Satisfies category V of the UCI breadth requirement.
Economics			
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.
English[1]	3 (on either or both exams)	8	Elective credit only. Fulfills Subject A requirement.
English Composition and Literature 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.
Environmental Science	3	4	Elective credit only.
	4 or 5	4	Environmental Analysis and Design E8.
French			
French Language	3	8	French 1A-B-C.
	4 or 5	8	French 2A-B-C. Satisfies category VI of the UCI breadth requirement.
French Literature	3	8	French 1A-B-C.
	4 or 5	8	French 2A-B-C. Satisfies category VI of the UCI breadth requirement.
German Language	3	4	German 1A-B-C.
	4 or 5	8	German 2A-B-C. Satisfies category VI of the UCI breadth requirement.
Government and Politics			
American Government	3, 4, or 5	4	Elective credit only.
Comparative Government	3, 4, or 5	4	Elective credit only.
History			
European	3, 4, or 5	8	Elective credit only.
United States	3, 4, or 5	8	Elective credit only.
Latin	3 (on one exam)	4	Elective credit only.
Virgil	3 (on both exams)	8	Latin 1A-B-C.
Literature	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.
Mathematics[1]			
AB Exam	3	4	Elective credit only.
	4 or 5	4	Mathematics 2A.
BC Exam[4]	3	8	Mathematics 2A.
	4 or 5	8	Mathematics 2A-B.

Advanced Placement Examination	AP Score	Unit Credit	Credit Allowed Toward Degree
Music Theory	3	8	Elective credit only.
	4 or 5	8	Music 16A-B-C.
Physics[1]			
Exam B	3, 4, or 5	8	Elective credit only.
Exam C, Part I or II	3	4	Elective credit only.
	4 or 5	4	Physics 7A/7LA
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	Spanish 1A-B-C.
	4 or 5	8	Spanish 2A-B-C. Satisfies category VI of the UCI breadth requirement.
Spanish Literature	3	8	Spanish 1A-B-C.
	4 or 5	8	Spanish 2A-B-C. Satisfies category VI of the UCI breadth requirement.
Statistics	3, 4, or 5	4	Mathematics 7 or Social Ecology 13.

[1] Maximum credit 8 units.
[2] Maximum credit 4 units.
[3] Additional placement may be available following individual counseling.
[4] Students who take the Calculus BC examination and earn a subscore of 3 or higher on the Calculus AB portion will receive credit for the Calculus AB examination, even if they do not receive a score of 3 or higher on the BC examination.

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, from any University of California Admissions Office, or on the World Wide Web at http://www.ucop.edu/pathways/.

Students applying for admission to UCI should complete the application and submit it according to the instructions provided in the *Undergraduate Application for Admission and Scholarships.* A nonrefundable application fee of $40 must accompany the application. This basic fee entitles the applicant to be considered at one campus; for *each* additional campus selected, an additional $40 fee is required. Applicants concerned with admission or application procedure questions *specific to UCI* should communicate directly with the Office of Admissions and Relations with Schools, University of California, Irvine, CA 92697-1075; telephone (949) 824-6703; World Wide Web: http://www.reg.uci.edu/ UCI/ ADMISSIONS/. Office hours are 8 a.m. to 5 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, 2001	File July 1–30, 2000
Spring quarter, 2001	File October 1–30, 2000
Fall quarter, 2001	File November 1–30, 2000
Winter quarter, 2002	File July 1–30, 2001
Spring quarter, 2002	File October 1–30, 2001

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 applications are being accepted 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 UCI Student Center Patio

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 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 no later than one month after completion of the term of the school they are currently attending. Delays in receiving official transcripts will disadvantage students in the academic advising process and can affect enrollment in appropriate courses.

EXAMINATION ARRANGEMENTS

Students should make arrangements to take the SAT I and SAT II examinations with the Educational Testing Service, College Board/ATP, CN 6200, Princeton, NJ 08541-6200; World Wide Web: http://cbweb1.collegeboard.org. 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 2000–2001 SAT I and SAT II are offered concurrently on the following Saturday mornings: October 14, 2000; November 4, 2000; December 2, 2000; January 27, 2001; March 31, 2001 (SAT I only); May 5, 2001; and June 2, 2001.

The 2000–2001 ACT Tests are offered on the following dates: September 23, 2000; October 28, 2000; December 9, 2000; February 10, 2001; April 7, 2001; and June 9, 2001.

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 Intent to Register

Students who are accepted for admission will receive, with their notification of admission, a Statement of Intent 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.

Student Records Access and Disclosure

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

INFORMATION FOR ADMITTED STUDENTS

ORIENTATION

Each May information about UCI's orientation programs sponsored by the Office of the Dean of Students is sent to applicants for admission who plan to enroll in the fall.

Student-Parent Orientation Programs (SPOP) are held four 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. Three **mini-SPOPs** (intensive one-day events) are held in July for students and parents who are unable to attend the multi-day programs. For more information, telephone (949) 824-7759 or send e-mail to jhalvaks@uci.edu.

Transfer Orientation is a unique one-day program geared to the needs of transfer students. Held at the end of July, the program provides advising, access to campus resources, a graduate school preparation workshop, and more.

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.

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 Division of Undergraduate Education is responsible for the following programs and services: the Campuswide Honors Program, which also administers the Scholarship Opportunities Program; the Center for International Education, which includes the Education Abroad Program and the International Opportunities Program; the Peer Academic Advising Program and academic advising for Undecided/Undeclared students; the Undergraduate Research Opportunities Program; the Learning and Academic Resource Center; Student Academic Advancement Services; the Testing Office; the Instructional Resources Center and the Instructional Technology Center; the Resource Center for Undergraduate Education Grants; administration of the UCI Washington D.C. Center Program; and the organization of the campus' student orientation programs in cooperation with the Division of Student Services. The Division's programs and services are described in detail below.

The Division is responsible for the administration of the revised Academic Honesty Policy (adopted by the UCI Academic Senate on December 12, 1996; see the Appendix) as it relates to undergraduates; for maintaining a classroom environment conducive to teaching and learning; and for implementing the Student Recommended Faculty Program, initiated at UCI in 1969. This is the only such program in the U.S. that affords undergraduates the opportunity to identify, select, and propose recruitment of nonrenewable faculty appointments in curricular areas of particular interest not represented at UCI. Call (949) 824-8658 for information.

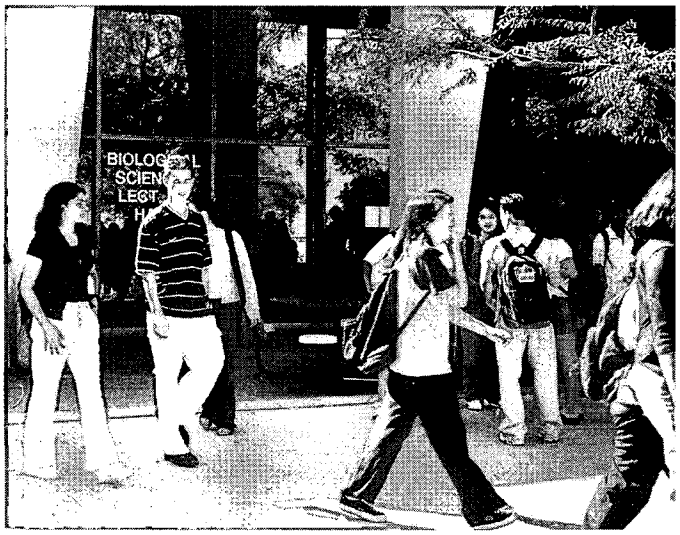
Additionally, the Division's Research, Evaluation, and Grants Office evaluates various programs and conducts research on topics related to undergraduate education such as student retention, academic needs, course grades, enrollment patterns, and curricular issues, and also assists in developing grant proposals for external funding.

Placement Testing

UCI's Testing Office administers placement tests to new and continuing students to ensure correct placement in selected introductory courses and to help students assess their readiness for University-level work. These tests are selected or developed by UCI faculty who also determine the grading criteria for each test. Results from placement tests are used by students and their academic counselors to formulate a plan of study which is best suited to the students' learning needs and career goals and to determine enrollment in introductory courses. Additional information, such as entrance examination scores, Advanced Placement (AP) scores, and high school work, also may be used to determine course placement.

Placement tests are given in the areas of chemistry, physics, precalculus, mathematical analysis, Chinese, French, Japanese, Korean, Spanish, and English as a second language:

1. Chemistry Placement Test. Students who plan to enroll in an introductory chemistry course (Chemistry 1P, 1A, or H2A) are required to take this test unless otherwise exempt.
2. Physics Placement Test. Students who plan to enroll in Physics 5A, 7A, or 7B are required to take this test unless otherwise exempt.
3. Precalculus Placement Test. Students who plan to enroll in Mathematics 2A are required to take this test unless otherwise exempt.
4. Mathematical Analysis Test. Students who plan to enroll in Mathematics 1A or 1B, or who have not had a prior course in precalculus and who plan to enroll in mathematics courses at UCI are strongly encouraged to take this test.
5. Chinese Placement Test. Students who plan to enroll in Chinese 1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, or 3C are required to take this test. A satisfactory score on this test will also satisfy the Language Other Than English breadth requirement.
6. French Placement Test. Students who plan to enroll in French 1A, 1B, 1C, or 2A are required to take this test unless otherwise exempt.
7. Japanese Placement Test. Students who plan to enroll in Japanese 1A, 1B, 1C, 2A, 2B, 2C, or 3A are required to take this test followed by an oral interview. A satisfactory score on the test and oral interview will also satisfy the Language Other Than English breadth requirement.
8. Korean Placement Test. Students who plan to enroll in East Asian Languages and Literatures (Korean) 1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, or 3C are required to take this test followed by an oral interview. A satisfactory score on the test and oral interview will also satisfy the Language Other Than English breadth requirement.



9. Spanish Placement Test. Students who plan to enroll in Spanish 1A, 1B, 1C, 2A, 2B, 2C, or 5 are required to take this test unless otherwise exempt. (See the Department of Spanish and Portuguese section of this *Catalogue* for more information.)
10. English as a Second Language (ESL) Placement Test. This test is required of students (a) whose native language is not English, (b) whose verbal score on the SAT I: Reasoning Test is 430 or less, (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 Test. 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 Test 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 brochure describing the placement tests and the testing schedule for the summer. Students should take required tests 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 June) 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.

The Testing Office also administers 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.

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

University Subject A Examination

The University of California system has established the Universitywide Subject A Examination (see University Requirements). Results from this examination are used to place students in UCI writing and, if needed, ESL courses. There is a $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 Undecided/Undeclared Advising Program until they select an academic major. This program is located in 256 Administration Building; telephone (949) 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 registration 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.*

Finish in Four

Many UCI students graduate in four years, with appropriate planning. In addition, UCI provides a Finish in Four Program for all undergraduates who wish to be assured of earning their degree in a timely manner. The goal of the program is to provide information and advising to enable students to make plans and decisions that will result in completion of their degrees in four years. The program involves a series of commitments on the part of the University and the student. Information about the Finish in Four Program is available from the academic advising offices.

Undecided/Undeclared Students

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

Learning and Academic Resource Center

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

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

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

Writing Workshops, sponsored by the Division of Undergraduate Education, seek to provide in-depth writing assistance of a focused and methodical nature to newly admitted students who may find English and Comparative Literature WR39A difficult because of insufficiencies in their University preparation. This assistance 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, a variety of workshops are offered throughout the year by SAAS, as well as a graduate school preparatory course for those students whose career interests require graduate study.

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

Students are encouraged to make appointments with Student Academic Advancement Services; telephone (949) 824-6234.

Honors Opportunities

UCI offers several challenging honors opportunities to its most motivated students. These include a comprehensive Campuswide Honors Program, which enrolls 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, also offered at the upper-division level, but open to all majors on campus; and several Excellence in Research programs.

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

Honors students are also encouraged to participate in the Education Abroad Program, the International Opportunities Program, or the UCI Washington D.C. Center Program during their junior or senior year. These programs are described in a later section.

Campuswide Honors Program

Founded in 1988, the Campuswide Honors Program (CHP) is available to selected high-achieving students in all academic majors from their freshman through senior years. It maintains an active roster of approximately 550 students. About 90 percent of CHP students have continued their studies after graduation from UCI at some of the most prestigious graduate and professional schools in the country.

CHP provides outstanding UCI students with a special curriculum consisting of small, seminar-style classes, close interaction with peers, mentorship by UCI's top faculty, and the opportunity to participate in undergraduate research. Students also receive assistance in applying for scholarships, internships, education abroad, and relevant work experience. Completion of the Campuswide Honors Program is noted on the student's transcript and baccalaureate diploma.

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

Students pursue three year-long interdisciplinary Honors core courses (one course per quarter), satisfying several categories of the breadth requirement. Many of these courses provide an interdisciplinary approach to major subjects and issues. Faculty from a variety of disciplines are chosen especially for their teaching ability and scholarship. During their junior and senior years, participants pursue original research under the direct supervision of faculty members, culminating in the production of an honors thesis, creative project, or publication-quality paper. Many CHP students also participate in major-specific honors programs. The senior honors thesis that is developed and produced through these programs satisfies the CHP thesis requirement.

CHP students begin their course of study by taking honors sections of the Humanities Core Course. Team-taught by professors from various disciplines in the School of Humanities, the Humanities Core Course is organized around major themes; the current focus is Exploration and Discovery. The course investigates what it means to explore and discover new ideas and experiences in terms of philosophical argument, imaginative expression, and cinematic and literary forms. It looks into the theme of the journey or quest, and some different ways that the exploration and discovery of "America" has been conducted, imagined, and recorded.

The Critical Issues in the Social Sciences sequence is team-taught by professors from the Schools of Social Sciences and Social Ecology. Topics include human vision; authority (dis)obedience, and human society; decisions and compromises and their rewards and penalties; human language and its disablement; and exotic societies (including our own).

The Idiom and Practice of Science interdisciplinary sequence explores the role science plays in addressing socially significant problems. Students develop the ability to understand scientific models and to judge the content, merit, and limitations of many issues of science in the modern world. The development of analytical and writing skills is emphasized.

Honors General Chemistry, designed for CHP members and other highly qualified students, covers the same material as Chemistry 1A-B-C, but in greater depth.

The Honors Introduction to Computer Science sequence is open to CHP students majoring in Information and Computer Science and other students by consent. The first course introduces basic concepts, fundamental laws and principles of software and hardware organization, program construction, applications, and policy and social issues. The second course covers in-depth concepts of programming and mathematical tools for analyzing programs, and the third builds on this background with respect to mathematical tools and analysis.

Extracurricular Activities. CHP students are invited to participate in many social and cultural activities, including weekly coffee hours, beach bonfires, poetry readings, faculty home visits/informal lectures, movie and play nights, trips to museums, and camping retreats. Honors students also produce a quarterly free-form creative writing journal, and continuing Honors students may volunteer for the Peer Mentor Program and Honors Ambassador Program, providing assistance to incoming Honors students.

On-Campus Housing. CHP students have the option of living on campus in various locations. Freshmen may choose to live in Middle Earth in "The Shire." CHP students, including some freshmen, select Arroyo Vista where they can choose from three 16-person, one 24-person, and two 32-person houses. These residences offer a valuable living/learning experience with other honors students and the community spirit that is a special feature of CHP. Students bring to the living experience their vitality, creativity, and dynamic dedication to learning. Activities have included get-togethers with honors faculty, staff, and students, international potlucks, off-campus retreats, study breaks, and other events such as workshops and special speakers that are dependent upon the interests of the residents.

Additional information is available from the Campuswide Honors Program,1200 Student Services II; telephone (949) 824-5461; e-mail: honors@uci.edu; World Wide Web: http//:www.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, International Studies, 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 by most of the programs. Many major-specific and Humanities Honors Program students also participate in the Campuswide Honors Program. The honors-level thesis that is developed and produced through these programs also satisfies the CHP thesis requirement. 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.*

Scholarship Opportunities Program

UCI encourages high-achieving students to learn how they can compete successfully for the most prestigious scholarships, research grants, and graduate fellowships available, and to begin learning about the process as early as possible. The Scholarship Opportunities Program (SOP), offered through the Campuswide Honors Program, presents workshops throughout the year, provides individual and group counseling, and sponsors the Winners' Circle, a club in which students help each other apply for scholarships, fellowships, and other awards. Additional information is available from SOP, 1200 Student Services II; telephone (949) 824-5461; e-mail: ucisop@ uci.edu; World Wide Web: http://www.honors.uci.edu/sop.html.

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 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,* shall be excluded by the Associate Deans from consideration for academic honors at graduation. For further information contact the Division of Undergraduate Education at (949) 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.

Undergraduate Research Opportunities Program

The Undergraduate Research Opportunities Program (UROP), in the Division of Undergraduate Education, encourages and facilitates research and creative activities by undergraduates. Research opportunities are available not only from every discipline, interdisciplinary program, and school, but also from many outside agencies, including national laboratories, industrial partners, and other universities. UROP offers assistance to students and faculty through all phases of the research activity: proposal writing, developing research plans, resource support, conducting the research and analyzing data, and presenting results of the research at the annual spring UCI Undergraduate Research Symposium. Calls for proposals are issued in the fall and spring quarters. Projects supported by UROP may be done at any time during the academic year and/or summer, and the research performed must meet established academic standards and emphasize interaction between the student and the faculty supervisor. In addition, all students participating in faculty-guided research activities are welcome to submit their research papers for faculty review and possible publication in the annual *UCI Undergraduate Research Journal.* For more information, contact the UROP Office, 1100 Student Services II; telephone (949) 824-4189; fax (949) 824-1607; e-mail: urop@uci.edu; World Wide Web: http://www.urop.uci.edu/.

UCI Washington D.C. Center Program

The UCI Washington D.C. Center Program supervises and supports students who pursue internships, elective courses, research, and creative activities in the nation's capital. This program, situated in the exciting environment of Washington, D.C., is open to students in all majors through a competitive application process. In the 2000–2001 academic year, students may enroll for fall or spring quarter, earn 12–16 units of course credit, and continue to be registered as full-time students. Financial-aid eligibility is maintained. Students who meet financial need and other eligibility criteria may also apply for a President's Washington Scholarship to help cover costs associated with participation in the program.

Students live in UC-arranged housing together with students from all the participating UC campuses. This provides a social and intellectual community throughout the quarter.

The UCI Washington D.C. Center also offers a unique opportunity for UCI faculty members and graduate students to teach and pursue research in the Washington, D.C. area. UCI faculty, along with UC faculty from Berkeley, Davis, Los Angeles, Santa Barbara, and Santa Cruz, offer programs with upper-division courses in diverse academic disciplines. UC students may receive credit for any of these courses.

Interested students with strong academic records are encouraged to apply. For further information, contact the UCI Washington D.C. Center Program Coordinator, 1100 Student Services II; telephone (949) 824-5400; World Wide Web: http://www.dccenter.uci.edu/.

Instructional Resources Center

The Instructional Resources Center (IRC), a unit of the Division of Undergraduate Education, provides instructional support through a variety of services and programs to the UCI teaching community. This support includes teaching development and skills training, as well as provision of classroom equipment, including instructional technology.

Teaching development includes consultation with teaching professionals regarding instructional strategies, methods, and learning theory. Faculty members and Teaching Assistants (TAs) may request consultations, and *all services are free and confidential.* Consultation can be further enhanced by videotaping the teacher in the classroom. Additionally, IRC staff can administer a midterm teaching evaluation to students and then provide the teacher with both statistical feedback and students' written comments. To schedule an appointment for a consultation or other service, call (949) 824-7584.

Other programs and services include: a two-day TA Professional Development Program during Welcome Week; a Faculty Summer Institute on Instructional Technology; a quarterly Teaching Colloquy; a quarterly on-line newsletter, *UCIdeas;* workshops specifically for new faculty, experienced faculty, and graduate students; and workshops and individual assistance with the compilation of Teaching Portfolios. IRC also co-hosts the annual "Celebration of Teaching."

IRC also provides services related to computerized presentation technology, video-conferencing, distance learning, audiovisual equipment and rental, film and video research and ordering, equipment repair, lecture hall media support, and video and multimedia production.

IRC's Instructional Technology Center, located on the ground floor of Social Science Tower, includes a 30-seat computer-assisted classroom, a room in which to conduct distance-learning courses, a 20-seat walk-in computer laboratory, and a media center where instructors can produce multimedia resources for their classes. Technicians and instructional specialist are available to advise teachers.

IRC's main office is located in Building 603, next to Humanities Hall. Hours are from 8 a.m. to 12 noon and from 1 to 5 p.m., Monday through Friday. Staff are available after hours and on weekends by special appointment. For general information, call (949) 824-1385; World Wide Web: http://www.irc.uci.edu/.

Center for International Education

The Center for International Education (CIE) includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP). CIE is a comprehensive resource and counseling center which helps students take advantage of the many worldwide opportunities that exist for study, work, internship, volunteering, research, and non-credentialed teaching, 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, enhances their overall intellectual development, and prepares them for a career in this globally interconnected society.

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 1100 Student Services II; telephone (949) 824-6343; e-mail: cie@uci.edu; World Wide Web: http://www.cie.uci.edu/.

EDUCATION ABROAD PROGRAM

The Education Abroad Program (EAP) of the University of California offers students the opportunity to experience a different culture while making progress toward degree objectives. EAP is an overseas study program which operates in cooperation with about 120 host universities and colleges in more than 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 an EAP counselor for a list of approved programs.

EAP offers three types of programs: (1) Full Immersion Programs. UC students take regular classes at the host university, in the language of the host country, side-by-side with native students. This option is available in many English-speaking and non-English-speaking countries, and students typically take classes in their major or related fields; (2) Language and Culture Programs. These are designed for students at beginning or intermediate language levels for the purpose of learning or improving language skills. UC students normally take classes side-by-side with other foreign students learning the language of the host country; and (3) Special Focus Programs. EAP offers a number of programs with a specific, limited academic focus, for example, Tropical Biology in Costa Rica, and Global Security and Economic Development in Japan.

The courses and fields of study open to EAP participants vary at each center. Each of the host universities has special areas of excellence and strength, as described in brochures for each country which are available at CIE and at http://www.uoeap.ucsb.edu/ on the World Wide Web.

Admission of UC undergraduate students to the Education Abroad programs is subject to the following qualifications: well-defined goals and clear academic plan for integrating EAP studies into the student's UC degree program; a minimum 3.0 cumulative grade point average at the time of application and maintained through departure for most programs (2.5 GPA required for many language and culture programs); junior standing by departure for most programs (sophomore standing for many language and culture programs); completion of language study 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.

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 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.

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

Summary of EAP Opportunities

	All/Some Courses in English	Language Prerequisite	Language Study Required[1]	Sophomore, Graduate Participation[2]	Applications due[3] Oct/ Nov	Jan/ Feb	Apr/ May
Armenia: Summer Program in the Caucasus	•			S		•	
Australia: Year Programs	•						•
Fall Semester Marine Science Program	•					•	
Austria—Spring Option following Hungary Fall Program	•	•		G		•	
Barbados: Fall and Year Programs	•			G		•	
Brazil: Spring and Year Programs		•	•				•
Canada: Fall and Year Programs	•			G		•	
Chile: Spring and Year Programs		•		G			•
China: Fall and Year Programs		•	•	G		•	
Intensive Chinese Summer Program		•	•	S		•	
Costa Rica: Spring and Year Programs		•		G			•
Fall and Spring Tropical Biology Programs	•		•		•		
Denmark: Fall and Year Programs	•		•	G		•	
Summer Intensive Language Program			•	S		•	
Fall and Year Architecture Programs	•					•	
Egypt: Year Program	•		•	G		•	
Year Intensive Arabic Study Program		•	•	G		•	
France: Year Programs		•		G		•	
Fall Language and Society Programs		•	•	S		•	
Fall and Year Science and Engineering Programs	•	•	•	G		•	
Germany: Year Programs		•		G		•	
Spring First-Year Language and Society Program			•	S	•		
Spring Second-Year Language and Society Program		•	•	S	•		
Spring Semester for Students with Advanced German		•		G	•		
Ghana: Fall and Year Programs	•					•	
Hong Kong (S.A.R.): Fall and Year Programs	•		•			•	
Fall and Year Business, Engineering, and Science Programs	•					•	
Spring Business, Engineering, and Science Program	•					•	
Hungary/Central Europe: Fall and Year Programs	•		•	G		•	
India: Fall Program	•		•	G		•	
Ireland (Republic of): Year Programs	•				•		
Israel: Fall, Spring, and Year Programs	•		•	G		•	
Fall, Spring, and Year Environmental Studies Programs	•			G		•	
Summer Language Program: Modern Hebrew in Jerusalem			•	S		•	
Italy: General Year Programs		•		G		•	
Fall and Year Architecture Programs		•				•	
Spring Architecture Program		•					•
Fall and Year Business, Economics, and International Studies Programs	•	•	•	G		•	
Spring Business, Economics, and International Studies Programs	•	•	•	G			•
Fall and Year Advanced Studies Programs		•		G		•	
Spring Advanced Studies Program		•		G			•
Summer Language and Culture Program			•	S		•	
Fall Language and Culture Programs			•	S		•	
Spring Language and Culture Program			•	S	•		
Japan: Year Programs	•	•	•		•		
Spring Global Security and Economic Development Program	•			S	•		
Year Engineering Program in Japanese		•	•	G	•		
Spring and Year Engineering Programs in English	•		•	S	•		
Year Economics Program		•	•	G	•		
Fall and Spring Language and Society Programs	•	•	•	S	•		
Korea: Fall and Year Programs	•		•			•	
Fall and Year Graduate Program		•		G		•	
Korean Studies Summer Program	•		•	S		•	
Mexico: Fall and Year Programs		•		G		•	
Winter Language and Society Program		•	•	S			•
Summer Language and Society Program		•	•	S		•	
Fall Field Research Program		•	•	S, G		•	
Spring Field Research Program		•	•	S, G			•
Fall and Year Business and Economics Program	•		•			•	
Spring Business and Economics Programs	•		•				•
Netherlands: Fall and Year Programs	•					•	
Spring Program	•					•	
Fall and Year Economics, Business Admin., and Internat'l Studies Program	•					•	
New Zealand: Year Programs	•						•
Russia: Fall Intermediate and Advanced Programs		•	•	G		•	
Singapore: Fall and Year Programs	•					•	
South Africa: Year Programs	•						•
Spain: Year Programs		•		G		•	
Fall Hispanic Studies Programs		•	•			•	
Spring Hispanic Studies Program		•	•				•
Fall Language and Society Program		•	•	S		•	
Spring Language and Society Program		•	•	S			•
Sweden: Fall and Year Programs	•		•			•	
Summer Intensive Language Program			•	S		•	
Taiwan: Fall and Year Programs	•	•	•			•	
Turkey: Fall and Year Programs	•		•	G		•	
United Kingdom: Year Programs	•				•		
Vietnam: Fall Language and Area Studies Program	•		•			•	

For additional details, visit the Center for International Education or http://www.uoeap.ucsb.edu/ on the World Wide Web.

[1] Intensive language programs precede the first term of programs where course work during the fall, spring, or year is not taught in English. Programs identified in this column require language study during the term or year.

[2] Sophomore participation is possible at several EAP sites, as noted by the "S" in this column. Graduate study is possible at most EAP sites; the "G" in this column highlights programs that offer special opportunities for graduate students.

[3] Application deadlines vary by UC campus, but are in the months noted in this column.

physical sciences, engineering, and computer science are available at many prestigious 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, as well as 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 economically disadvantaged students; and a competitive EAP Alumni Scholarship. Contact CIE for additional information.

Normally, students participate in EAP full immersion and special focus programs 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. Many language and culture programs are also open to sophomores; therefore, applications can be made in the freshman year. 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.

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). Any UCI student (undergraduate, graduating senior, or graduate) in good academic standing, regardless of major, class level, or foreign language ability, may participate in IOP.

CIE staff provide information and counseling to assist students in finding an appropriate program to meet their needs and interests. Students may choose from academic study (with transferable credit), paid work, paid or unpaid internships, unpaid or compensated volunteer service, field research, and paid teaching opportunities in nearly every country in the world. This includes all academic programs sponsored by U.S. institutions that occur on foreign soil or water (as in the case of the Semester at Sea program), direct enrollment at foreign institutions, summer session abroad programs through 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 can make progress toward their UCI degree by fulfilling major, minor, or breadth requirements. Students may apply for transfer credit and UCI financial aid by completing the International Study Advance Contract. Many scholarships are also available.

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.

The Engineering Tower

REQUIREMENTS FOR A BACHELOR'S DEGREE

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

Students with identified learning and/or physical disabilities, including language-acquisition problems, are eligible to receive support through the Office for Disability Services; telephone (949) 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 680 or better on the SAT II Writing Test if taken in May 1998 or later, or a score of 660 if taken May 1995–April 1998; *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 a transferable 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, 1999 (see Placement Testing). Transfer students who have not satisfied the Subject A requirement should contact the UCI Composition Program Office (420 Humanities Instructional Building); telephone (949) 824-6717.
2. Enrolling in sections of the Humanities Core Course designated "S/A." (NOTE: Students held for Subject A and enrolled in the Humanities Core must enroll in a S/A section of the Core Course during their first quarter. Successful completion of the writing component of these sections of this course with a letter grade of C or better will satisfy the Subject A requirement. Students who do not receive a letter grade of C or better in Humanities 1A S/A in fall quarter and who continue to be held for Subject A must enroll in Humanities 1B S/A during the winter quarter and satisfy the requirement by earning a letter grade of C or better.)
3. 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:

1. Completion in high school of one year of United States history with grades of C or better, *or* one semester of United States history and one semester of United States government with grades of C or better.
2. Achieving a score of 3, 4, or 5 on the College Board Advanced Placement Examination in United States History.
3. Achieving a score of 550 or better on the SAT II: American History and Social Studies test.
4. Presentation of a certificate of completion of the requirement at another California institution.
5. Completion at another U.S. institution of one year of college-level United States history with grades of C or better, *or* one course in United States history and one in United States government with grades of C or better.
6. Completion at UCI, with a grade of C or better, of one year of United States history (History 40A, 40B, 40C) *or* of one quarter of United States history (History 40A, 40B, or 40C) and one quarter of United States government (Political Science 21A).

UCI Requirements

UNIT REQUIREMENT

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

GRADE REQUIREMENT

A minimum grade average of at least C (2.0) is required (1) overall, (2) in all of the courses required for the major program, and (3) in the upper-division courses required for the major program. Higher averages than this may be required only in honors programs. Students who fail to attain a C (2.0) average in courses required in the major program may, at the option of the major unit, be denied the privilege of pursuing a major program in that unit. (In this context, "the courses required in the major program" are defined as the courses required for the major and offered by the program of the student's major.)

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 to 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. Effective fall 1997, students who have not completed the lower-division writing requirement before the beginning of their seventh quarter at UCI will be subject to probation. Students transferring to UCI normally should have satisfied the lower-division writing requirement before entering UCI; if, however, they have not, they must complete it within their first three quarters of enrollment or they will be subject to probation. ESL students must complete the lower-division writing requirement before the beginning of the seventh quarter following the completion of their ESL courses or they will be subject to probation.

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

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

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. 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.
2. English and Comparative Literature WR139W.
3. 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.

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 one course from 5, 6, 10, 11, 15, 20, 35, 45, 55, 65, or 75

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, 14, 15, 20E, 20F, Physics 18, 20A, 20B, 20C, 20D, 21, Engineering E5

Interdisciplinary: Any three courses from Biological Sciences H90, Chemistry H90, Earth System Science H90, Mathematics H90, Physics H90

Physics: Physics 3A-B-C and 3LB-LC; 5A-B-C and 5LB-LC; three quarters of Physics 7A-B-D-E plus 7LA-LB-LD; three courses from Physics 18, 20A, 20B, 20C, 20D, 21, Earth System Science 10, 14, 15, 20E, 20F, Engineering E5; Physics 17A-B plus one course from Physics 16, 18, 20A, 20B, 20D, 21, Engineering E5

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

The annual Technical Career Fair, sponsored by the UCI Career Center, brings recruiters from more than 100 companies to campus.

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*

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

Geography: Social Science 5A*, 5B*, 5C*, 5D*, 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.)

People and Society:
Asian American Studies 60A*, 60B*, 60C*
Social Science 61*, 62*, 63*, 70A*, 70B*, 70C*
Women's Studies 60A*, 60B*, 60C*

Political Science: Political Science 6A*, 6B*, 6C*, 21A, 31A, 41A, 51A, 71A

Psychology:
Psychology 7A*, 9A*-B-C, 11E, 21A, 23A, 46A, 55A, 56L, 78A
Psychology and Social Behavior P9*

Social Ecology:
Criminology, Law and Society J7*
Environmental Analysis and Design E8*
Social Ecology 10*, H20A*-B*-C*

Social Science: Social Science 1A*, H1E*-F*-G*, 2A*

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

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

Arts:
Arts Interdisciplinary 1A-B-C
Dance 90A-B-C; 91A-B-C
Drama 40A, 40B, 40C
Music 14A-B-C; 40B-C-D
Studio Art 1A-B-C; 10A, 10B, 10C

Humanities:
Art History 40A, 40B, 40C; 42A, 42B, 42C; 80A, 80B, 80C
Classics 45A-B-C
East Asian Languages and Literatures 55 (three different topics)
Film Studies 85A-B-C
French 50 (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
Humanities 1A-B-C; 5A, 5B, 5C
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: Philosophy 140, History 135A, 135B, 135C, 135D, 135E, 135F
Russian 50 (three different topics)

Interdisciplinary:
African-American Studies 40A, 40B, 40C
Women's Studies 50A, 50B, 50C

Literature:
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

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

Anthropology 10A-B-C
Economics 10A-B and either 10C or 30
Information and Computer Science 10A-B-C; 10A or 21, plus 22, 23
Linguistics 3, 10, 20 (NOTE: Linguistics 3, 10, 20 may be counted toward either category V or III but not both.)
Mathematics 2A-B plus one course from 2C, 2D, 2J, 6A, or 7; 2A, 6A, 7; 6A-B plus one course from 2A, 6C, or 7
Philosophy 29, 30, 31
Psychology 10A-B-C
Social Ecology 166A-B-C
Social Science 9A-B-C; 10A-B-C; 29, 30, 31; 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
French 2A, S2AB
German 2A, S2AB
Greek 25
Italian 2A
Japanese 2A, S2AB
Korean 2A
Latin 25
Portuguese 120A
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.

E. Completion of an approved course of study through the Education Abroad Program (EAP). Careful planning is required to ensure that this requirement is fulfilled. Check with an EAP counselor at the Center for International Education to determine the programs in countries that fulfill this requirement.

F. The equivalent as determined by an appropriate and available means of evaluation. For information on availability of such examinations and testing schedules, consult the Testing Office, Student Services II, (949) 824-6207. If an appropriate means of evaluating competence in a non-English language of instruction does not exist, satisfactory completion, with a C average or better, of two years of formal schooling at the sixth grade level or higher in an institution where the language of instruction is not English will meet the requirement. Appropriate documentation must be presented to substantiate that the course work was completed.

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):
African-American Studies 40A, 40B, 40C
Anthropology 85A, 125X, 125Z, 136K, 138R, 138T, 161T, 162B
Art History 163
Asian American Studies 60A, 60B, 60C, 110, 111, 111A, 141, 142, 150, 151, 151A, 151B, 151C, 151D, 151E, 151G, 161, 162, 197
Classics 175
Education 104E, 124, 155, 160
English and Comparative Literature CL 9, CL 105, E 105
Environmental Analysis and Design E15, E102U, E131U
Film Studies 130
History 15A, 15B, 15C, 146A, 146B, 146C, 148A, 148B, 150, 151A, 151B, 152
Humanities 1C
Music 78A, 78B
Philosophy 131E
Political Science 124A, 126A, 126C
Psychology 174A, 174B, 174E, 174F
Spanish 100E, 110C, 140A, 140B, 142, 143
Social Science 61, 62, 63, 70A, 70B, 70C, 70T, 78A, 78B, 78C, 166, 167, 168, 170B, 170E, 170F, 171F, 172B, 172C, 172D, 172E, 173F, 173G, 173H, 173I, 173J, 173K-L, 175A, 175B, 178B, 178C, 178D, 178E
Sociology 63, 65, 161
Studio Art 149
Women's Studies 50A, 50B, 50C, 139, 150, 160, 161, 162, 163, 197

International/Global Issues (VII-B):
Anthropology 2A, 121A, 121D, 121E, 121H, 121J, 125A, 125B, 125P-Q, 126N, 127A, 135A, 135H, 136D, 138O, 138P, 138Q, 162A, 163A, 163H, 163K, 164K, 164L, 164P, 174A
Art History 40A, 40B, 40C, 42A, 42B, 42C, 80A, 80B, 80C, 162A, 162B, 162C
Asian American Studies 164, 171, 171A, 173
Chinese 3A-B-C, 100A-B-C, 101A-B-C, 115, 180
Classics 176
Criminology, Law and Society J191
Dance 80, 81, 90A-B-C, 91A-B-C
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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 Humanities 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 must declare a major by the time they reach junior status (90 units excluding college work completed prior to high school graduation), and should make certain that the background and the preparation prerequisite to junior and senior work in the major have been accomplished. Transfer students should read the section on Information for Transfer Students: Fulfilling Requirements for a Bachelor's Degree.

In addition to performance, UCI Drama students also study other mutually related areas of the theatre: literature, history, criticism, design and stage management, and production.

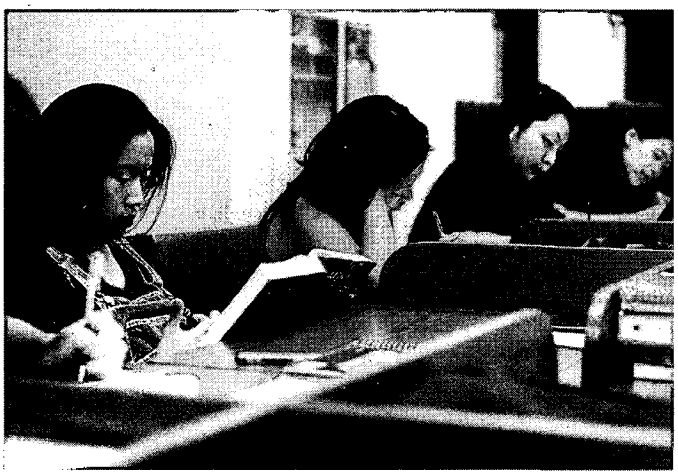
Students should note that with the exception of courses designated Pass/Not Pass Only, courses taken Pass/Not Pass may *not* be used to satisfy specific course requirements of the student's school and major, unless authorized by the appropriate dean. Additional information on grading is located in the 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 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 pages 54–55, 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 within the first three quarters 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 chemistry or 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, economics, geography, linguistics, people and society, political science, psychology, social sciences, 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; (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 receive credit for the UCI breadth requirement by completing the Intersegmental General Education Transfer Curriculum (IGETC) prior to transfer. 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 and on the World Wide Web at http://www.assist.org/.

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 Agreement (UCTCA), can advise students about California community college courses and units which will transfer to the University. In addition, staff in the UCI Office of Admissions and Relations with Schools can advise students about the transferability of courses. UCTCAs for all California community colleges are available on the World Wide Web at http://www.assist.org/.

Four-Year Institutions

Unit credit is granted for courses consistent with the University of California's functions and which have been completed in colleges or universities accredited by the appropriate agencies. While limitations of credit may be imposed in certain subject areas, these are consonant with the curricula for all students in the University of California. No defined maximum number of units which can be earned toward the degree is set for students transferring from four-year institutions. However, see the Residence Requirement in the UCI Requirements section.

University of California Extension

Extension courses prefixed by XB, XD, XI, XR, XSB, and XSD are granted unit credit on the same basis as courses taken in residence at any accredited collegiate institution.

Students intending to transfer Extension course credit for a degree at another college or university should verify acceptance of the course with that institution. Resident students of the University of California must obtain the consent of the dean of their school or college prior to enrolling for credit in an Extension course. Extension courses are not accepted as part of the residence requirements of the University. Grades earned in University Extension are not used in calculating the University grade point average.

Decisions regarding the acceptability of extension courses taken in institutions other than the University of California rest with the Office of Admissions and Relations with Schools. Decisions regarding the applicability of such courses toward specific degrees and majors rest with the student's academic dean.

COURSE CREDIT FOR WORK TAKEN ELSEWHERE

The policies above refer only to the unit transferability of courses and are uniformly implemented on all UC campuses. Thus, courses which are determined by the University of California to be transferable are assured only of being granted elective course credit. The application of transfer work to specific course and major requirements is determined by the student's academic dean.

The Irvine campus makes every effort to eliminate all barriers to orderly progress from California community colleges into UCI's programs. To this end, courses from many California community colleges have been reviewed by UCI faculty and approved as acceptable toward meeting lower-division major or 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. Articulation agreements are available on the World Wide Web at http://www.assist.org/.

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.

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.* This booklet is distributed at the UCI Student Center 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 ZOTBills 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. Students enrolled in zero (0) units or not previously enrolled at the close of business at the end of the second week of classes are assessed a $50 late enrollment fee. A signature of the student's dean is required for late enrollment after the second week of classes.

The student is subject to *both* late service fees 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 with the Registrar, a student may add or drop classes, change sections of a course, change units in a variable unit course, or change the grading option by completing an Add, Drop, or Change Card, available from the student's academic counseling office or the Registrar's Office. In the first two weeks of classes, instructors may authorize the use of TELE for adding, dropping, and changing the grade option.

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 instruction, a student may add classes provided approval is granted by the instructor in charge of the class.

To change the grading option of a class during the first two weeks of instruction, students must obtain the signature of the instructor in charge. The Change Card must then be submitted to the Registrar's Office no later than the end of the second week of instruction. Changes in the grading option from the third through the tenth week require approval of the instructor and the student's academic dean.

Students may drop classes from the first through the sixth week of a quarter, inclusive, with the signature of the instructor in charge.

After the sixth week of instruction, students may add or drop a class only with the permission of the instructor and the student's academic dean. Permission to drop after the sixth week can be

Classrooms at UCI range from performance studios to large lecture halls, and from laboratories to small-group seminar rooms.

granted only if the student is not failing the course and is 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.

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.

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.

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.

Change of Major

Each school or program has its own standards for change of major, and some majors are impacted, that is, more students apply than can be accommodated. Once a student selects a major, or decides to change majors, the student should visit the academic 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.

Reduced-Fee Part-Time Study Program

Part-time study for credit leading to an undergraduate or graduate degree is 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, if applicable, one-half of the Nonresident Tuition Fee or Professional School

Student Fee. 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 *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 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 copies of the academic record 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 record will be released only upon receipt of a signed request from 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 $5 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. Other transcripts can be released by the Registrar only to another college, university, or educationally related agency 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. Verifications may be needed for 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 full-time status; enrollment in 6.0–11.9 units is considered half-time status; enrollment in 5.9 units or less is considered less than half-time status. Enrollment in eight units is considered full-time status for summer session.

Cancellation/Withdrawal

Undergraduate 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. 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 in the Grading System section.)

A graduate student in good academic standing who wishes to withdraw and intends to return within one year should submit both the Cancellation/Withdrawal form and an application for a Leave of Absence. Further information 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 subject to dean's approval and campus deadlines (August 1 for fall quarter, November 1 for winter quarter, and February 1 for spring quarter). To apply for readmission, a student must first pay a nonrefundable $40 Application Fee at the Cashier's Office, and then file the Application for Readmission with the Registrar's Office. Remittance of the $40 Application Fee may be made by bank draft or money order made payable to Regents-UC.

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.

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.

Enrollment at Other Institutions

Various programs exist that enable currently registered UCI students in good standing to take courses at other UC campuses, as well as at California State University and California Community College campuses. More information is available from the Registrar's Office and from the academic counseling offices.

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 University of California, Irvine, Residence Deputy, Registrar's Office, 215 Administration Building, Irvine, CA 92697-4975, telephone (949) 824-6129.

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 academic counselors. Additional information is available from the Commencement Office; telephone (949) 824-6378; World Wide Web: http://www.commencement.uci.edu/.

Application for Graduation. In order to receive a degree, an undergraduate student must file an Application for Graduation at the appropriate dean's office no later than the deadline date set by that office. 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 and see the *Schedule of Classes* 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 student graduated. 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.

In 1998-99 UCI awarded 3,167 bachelor's, 511 master's, 201 doctorate, and 87 medical degrees. An additional 176 students completed teacher credential programs.

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 multiquarter 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 may replace an NR with a grade within one quarter of subsequent enrollment or may authorize the student to drop the class, which would result in the NR becoming a W).

UR— Unauthorized Repeat. A UR notation is recorded for the grade when a student already has a passing grade for a nonrepeatable course and has repeated the course again.

W — Withdrew. A W notation is recorded on a student's permanent record for each course a student drops after the end of the sixth week of instruction in a quarter. Courses in which a W has been entered on a student's record will be disregarded in determining the student's grade point average and will not be considered as courses attempted in assessing the student's satisfaction of the normal progress requirement.

Plus and minus suffixes may be attached to the grades A, B, C, and D.

GRADE POINTS AND GRADE POINT AVERAGE

Grade points are assigned on a four point basis: A, 4 points per unit; B, 3 points per unit; C, 2 points per unit; D, 1 point per unit; F and I, zero points. Plus or minus suffixes modify the above by plus or minus 0.3 grade point per unit, with the exception of the A+ grade which is assigned 4 points per unit.

Requirements for a bachelor's degree, with the exception of certain programs in Engineering, include the accumulation of baccalaureate credit for a minimum of 180 quarter units with an average of at least C (grade point average of at least 2.0). A course at UCI normally offers four quarter units of credit, and, in the following text, the term "course" may be understood to carry four units. The grade point average is the sum of all accumulated grade points (grade points earned in a course taken for a letter grade times the unit value of the course) divided by the sum of all units attempted. P, NP, S, U, NR, IP, and I grades, as well as workload credit, are excluded in computing grade point average.

Baccalaureate credit counts toward degree requirements and is used to compute the grade point average. Workload credit is used to determine full-time status for financial aid, housing, student loans, and other purposes. For most courses at UCI, baccalaureate credit and workload credit are identical. Courses differing in this credit or "workload credit only" courses are identified in the course description.

It should be noted that final grades as reported by professors are normally permanent and final. A professor may not change a final grade except to correct a clerical or procedural error. Clerical or procedural errors should be corrected within one regular academic quarter after the grade is assigned. No grade may be revised by reexamination or, with the exception of I and IP grades, by completing additional work. If a student is dissatisfied with a grade, the student should review their work with the instructor and receive an explanation of the grade assigned. A grade may be appealed on any reasonable grounds to the instructor, the chair of the department, and the dean 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 the 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.) Unit credit for courses so repeated will be given only once, but the grade assigned at each enrollment shall be permanently recorded. In computing the grade point average of an undergraduate with repeated courses in which a C-, D+, D, D-, F, or NP (if repeated for a letter grade) was received, only the most recently received grades and grade points shall be used for the first 16 units repeated. In case of further repetitions, the grade point average shall be based on all additional grades assigned.

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 (or a Pass or Credit grade equivalent to C).

1. Students who fail to attain a letter grade of C or better in English and Comparative Literature WR 37 must repeat the course or enroll in the equivalent. It is recommended that these students enroll in WR 39A followed by WR 39B-C to assure completion of this requirement. Students who fail to attain a grade of C or better in WR 39C 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 WR 39B-C sequence must repeat the course or courses in question.
3. Students who fail to attain a grade of C or better in at least two quarters of the writing component of the Humanities Core Course after satisfying the Subject A requirement by attaining a grade of C or better in Humanities 1A S/A, should substitute English and Comparative Literature WR 39C if they need one quarter of additional work to complete the requirement, or English and Comparative Literature WR 39B-C if they need two quarters to complete the requirement. Students who fail to attain a grade of C or better in Humanities 1A S/A, enroll in Humanities 1B S/A and attain a grade of C or better, but fail to attain a grade of C or better in the writing component of Humanities 1C, should substitute English and Comparative Literature WR 39C to complete the requirement.
4. Students who fail to attain a grade of C or better in either Humanities 1A S/A or Humanities 1B S/A, should substitute English and Comparative literature WR 39A-B-C 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.

Effective fall 1997, students who have not completed the lower-division writing requirement before the beginning of their seventh quarter at UCI will be subject to probation. Students transferring to UCI normally should have satisfied the lower-division writing requirement before entering UCI; if, however, they have not, they must complete it within their first three quarters of enrollment or they will be subject to probation. ESL students must complete the lower-division writing requirement before the beginning of the seventh quarter following the completion of their ESL courses or they will be subject to probation.

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, or their equivalent, are obligatory in all undergraduate courses except laboratory and studio courses, 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 complimentary copy of the student's permanent record is available from the Registrar's Office. On the copy, the student will find grades for all the quarters taken at UCI, a computation of grade point average at the University of California, and a list of the University requirements completed (Subject A, American History, and American Institutions).

Declaration of Major

All students are required to declare a major by the time they reach junior status (90 units excluding college work completed prior to high school graduation) or they will become subject to disqualification from further registration in the University. Refer to the Enrollment and Other Procedures section for more information.

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 the Reduced-Fee Part-Time Study Program section.

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, which progress includes declaration of a major by the time they reach junior status (90 units excluding college work completed prior to high school graduation).

Welcome to Anteater Country! UCI's official mascot keeps spirits running high.

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

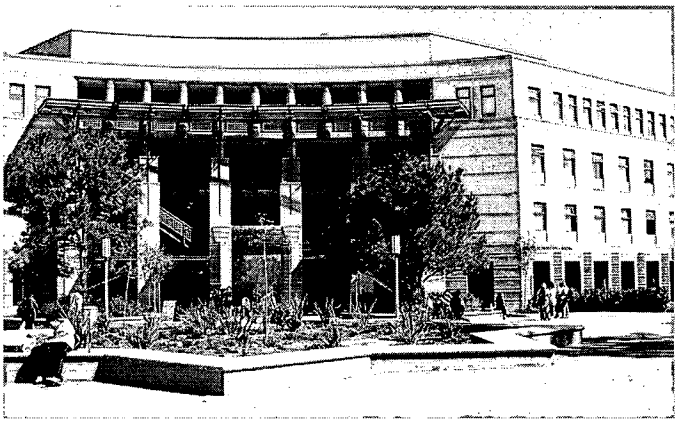
5. Units earned under the following two circumstances are not to be counted toward determination of the quarter at entrance under (4) above: (a) Advanced Placement Examination; (b) concurrent enrollment in college courses while in high school.

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.

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.



The Humanities Instructional Building

HONORS

Information about honors opportunities at UCI is found in the Division of Undergraduate Education section and the academic unit sections.

Quarterly Undergraduate Honors

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

Honors at Graduation

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 UCI Extension

If a UCI student wishes to enroll in a UCI Extension course concurrently with enrollment in regular courses, the entire program of study must be approved in advance by the dean of the student's school (the Dean of the Division of Undergraduate Education, for undecided/undeclared students; the Dean of Graduate Studies, for graduate students). Fee information is available from the UCI 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 UCI 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 Intercampus Exchange Program.

SUPPLEMENTARY EDUCATIONAL PROGRAMS

Summer Session and UCI Extension

Gary W. Matkin, **Dean of Continuing Education**

SUMMER SESSION

Several summer sessions are held on the Irvine campus. The summer 2001 schedule is: Session I, June 25–August 1; Session II, August 6–September 12; overlapping 10-week session, June 25–August 31. 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 lifestyle and culture, the program provides students with a sampling of collegiate life abroad.

Information is available from the Summer Session Office in the UCI Extension Building; telephone (949) 824-5493. Application forms and course listings are available in March.

UCI EXTENSION

UCI Extension serves the continuing education needs of the community by providing more than 2,000 credit and noncredit courses, certificate programs, specialized studies, seminars, workshops, conferences, and lecture programs annually. Call (949) 824-5414 for a free quarterly catalogue.

Individual courses promote career advancement and lifelong learning, while certificate programs offer the opportunity for a distinctive achievement in a wide range of fields. Certificate programs are a sequence of courses designed to develop in-depth expertise to improve career opportunities. Extension offers nearly 40 certificate programs in fields as diverse as information technologies, engineering, business and management, design and digital arts, education, health and social sciences, science and technology, and legal programs.

To meet the specialized, in-house training needs of business and government, UCI Extension develops custom education and training programs. Free evaluations of training needs are available from the director of corporate contract training and professional development programs at (949) 824-3051.

In addition, Extension offers a wide variety of cultural enrichment programs in such areas as history, literature, creative writing, the arts, foreign language, film, screenwriting, and photography.

Most courses are held in the evenings and on weekends to accommodate the working professional. They are conducted at UCI, at the UCI Learning Center in Orange, and at other sites throughout Orange County.

The general public also has an opportunity to take regular UCI courses without formal admission to the University, through UCI Extension's Access UCI Program (also know as concurrent enrollment). Courses are available on a space-available basis with the approval of the course instructor or academic department. Call (949) 824-5414.

Several unique programs complement UCI Extension. The Women's Opportunities Center (WOC) provides resources and support for individuals who are in need of career-direction programs and services; telephone (949) 824-7128. The Academy for Lifelong Learning (ALL) offers a wide variety of educational and cultural programs for the retired or semi-retired intellectually active adult, all for one annual membership fee of $75. Academy members are also eligible for a 30 percent discount on most UCI Extension courses. For more information, call (949) 824-7927.

UCI Extension English and Certificate Programs for Internationals

UCI Extension's program in English as a Second Language (ESL) prepares international students to pursue their educational objectives in U.S. colleges and universities, as well as provides opportunities for professional development through certificate programs. An intensive English program offers core courses in grammar, writing, reading and vocabulary development. Other topics include seminar reporting, discussion strategies, listening, note-taking, debate and public speaking, and writing research papers. Elective courses such as TOEFL test preparation, American history and business, and computer English also are available.

Professional certificate programs for international students and professionals are offered in an accelerated full-time format. The fast-paced educational format helps individuals become more fluent and effective in their English communication skills, increasing their career potential in today's competitive global business environment.

Requests for information should be addressed to the English and Certificate Programs for Internationals, UCI Extension, P.O. Box 6050, Irvine, CA 92616-6050; telephone (949) 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 in this *Catalogue* for information.

ROTC

Although actual ROTC courses are not taught on the UCI campus, a cross-town agreement allows qualified UCI students to participate in the Air Force Reserve Officers Training Corps (AFROTC) or the Army Reserve Officer Training Corps (AROTC). Academic units earned in these programs are counted as elective units toward fulfillment of UCI graduation requirements. Additional information is available from the Office of Admissions and Relations with Schools, 204 Administration Building.

AIR FORCE ROTC

Through arrangements with Loyola Marymount University; the University of California, Los Angeles; and the University of Southern California, two- through four-year AFROTC programs are available to all qualified UCI students. Successful completion of as little as four semesters of AFROTC academic courses and leadership laboratories can lead to a commission as a second lieutenant in the Air Force.

AFROTC offers a variety of two-, three-, and four-year scholarships, many of which pay the full cost of educational instruction and fees. Four-year scholarships for incoming students must be applied for before December 1 in the year prior to entering college. Scholarships provide tuition and fee payments and a tax-free stipend of $200 per month. More information is available from the Department of Aerospace Studies, Loyola Marymount University; telephone (310) 338-2770; World Wide Web: http://www.lmu.edu/acad/rotc/main.htm. Other detachments are located at: University of California, Los Angeles, (310) 825-1742; University of Southern California, (213) 740-2670.

ARMY ROTC

Through arrangements with the Department of Military Science at the University of Southern California's program at California State University, Long Beach, or The Claremont Colleges Extension Office at California State University, Fullerton, two- and four-year AROTC programs are available to all qualified UCI students. Successful completion of the 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 $200 per month are available. 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) 740-1850; e-mail: dulchino@usc.edu.

MAJOR CAMPUS PUBLICATIONS

In addition to the *UCI General Catalogue,* various 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. A variety of information about UCI is also available 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; registration dates for each quarter; lists of all classes to be offered each quarter and the time, room, and instructor scheduled for each; and any enrollment restrictions on classes, such as consent of instructor required. Just prior to the first day of instruction for each quarter, the Registrar's Office issues an addendum that lists added and cancelled classes and changes in time, instructor, or classroom assignments. Standard abbreviations are used in the *Schedule* (and on student transcripts) to indicate course designations; see the *Catalogue's* Appendix for a complete list. The Registrar's Office also provides online information on the World Wide Web at http://www.reg.uci.edu/.

Because the *Schedule* is published quarterly, it is a timely source of information on new or changed policies, procedures, and fees that could not be included in the *Catalogue* because of the latter's annual publication schedule. 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). It is distributed to new and continuing students at the UCI Student Center 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. These publications can be obtained from the academic unit offices.

Policies Applying to Campus Activities, Organizations, and Students

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 available on the World Wide Web at http://www.newstudent.uci.edu/. 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

UCI students publish the weekly campus newspaper the *New University* and operate a radio station, KUCI (88.9 FM).

UCI Journal and UCI News

The *UCI Journal,* published twice yearly, contains feature stories on UCI research, programs, and people; information on gifts, grants, students, and campus events; and commentaries on current issues. *UCI News,* a twice-monthly newspaper, features information on campus research, programs, events, and people, plus a calendar of upcoming events. Both of these publications are also available on the World Wide Web at http://www.communications.uci.edu/.

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, medical books, periodicals, computers, software, school supplies, UCI clothing and insignia items, and gifts and greeting cards. Hours of operation are 8 a.m. to 7 p.m., Monday through Thursday, 8 a.m. to 5 p.m. on Friday, and 10 a.m. to 4 p.m. on Saturday; telephone (949) 824-BOOK; World Wide Web: http://www.book.uci.edu/. Electronic inquiries and orders may be sent to books@uci.edu.

UCI Career Center

The UCI Career Center assists UCI students in career planning and decision making through workshops, individual counseling, employment opportunities, and internships. The Center also assists students and alumni seeking career employment opportunities; teaches job-search skills and interviewing techniques; provides career job listings and a full program of on-campus recruitment; and provides graduate and professional school information. Students may easily access all job listing using their student I.D. number via the Career Center's Web site at http://www.career.uci.edu/. This site may be accessed through terminals located in the Center, from the many other on-campus terminals available to students, or via home Internet access. 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 opportunities to obtain career-related work experience 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. and provides a behind-the-scenes look at the 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. Candidate files containing letters of recommendation are maintained and kept active free of charge for currently enrolled master's and Ph.D. candidates seeking positions in higher education; a $75 reactivation fee is charged after six months past graduation for one year of service. A mailing fee of $5 per file applies to all candidates, enrolled or not.

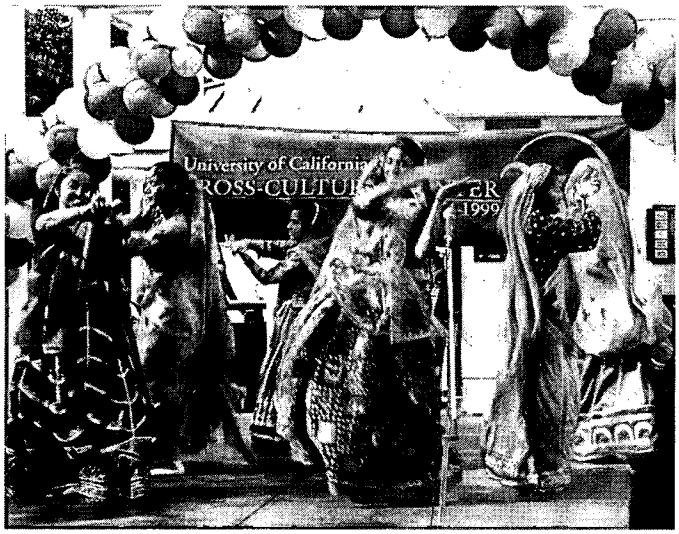
In addition, the Center offers services and programs to meet specialized needs of specific student populations, including the disabled, women, culturally diverse and disadvantaged students, and returning students. Additional information is available from the Center; telephone (949) 824-6881.

Child Care Services

Child Care Services includes six Centers offering programs for children from three months to 12 years of age. The programs are open to children of UCI students, faculty, and staff, with priority enrollment and tuition subsidy available to students at three of the Centers. Information may be obtained by visiting the Centers or telephoning (949) 824-2100.

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



The Cross-Cultural Center sponsors annual special events such as the Rainbow Festival, Asian Heritage Week, African-American History Month, and Cinco de Mayo.

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 Center's services are free of charge to currently enrolled students. The Counseling Center is located on the second floor of Student Services I; telephone (949) 824-6457; World Wide Web: http://www.counseling.uci.edu.

Office of the Dean of Students

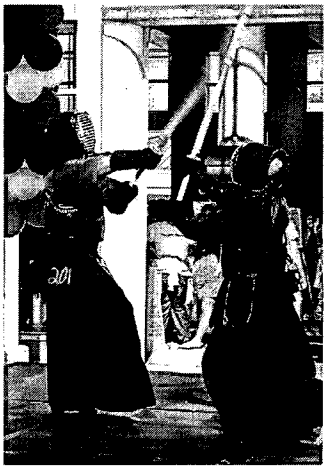
The Office of the Dean of Students is dedicated to assuring that the diversity of student services and programs offered complement and enrich the educational and out-of-class life of UCI students. This goal is achieved through the provision of a comprehensive range of cultural, social, and intellectual opportunities which promote student learning and development. Additional information is available from the Office; telephone (949) 824-5181; e-mail: deanstu@uci.edu; World Wide Web: http://www.dos.uci.edu/.

CENTRAL OFFICES

The central office of the Dean of Students houses a number of services. More than 275 **clubs and organizations** with a combined membership exceeding 14,000 students encompass a wide range of interests including academic, environmental, faculty/staff, multicultural, political, recreational, religious, service, social, and sports.

UCI's Greek community includes 31 **sororities and fraternities** with more than 1,200 members. Programs include Rush (membership recruitment), New Member Education Conference, Faculty Recognition Reception, Greek Songfest, Greek Week, and Greek Awards Night. Many of UCI's fraternities and sororities maintain houses in Arroyo Vista, UCI's theme house community.

The Office also serves as the "home base" for **UCI Volunteer Projects**, a confederation of campus service clubs and organizations which sponsors community service programs and involvement opportunities for UCI students.



The Office of the Dean of Students provides services for veterans. Housed within its central office, **Veterans Services** emphasizes support services for veteran students and eligible dependents of veterans. Assistance includes benefit certification, work-study, and orientation and outreach programs. Telephone (949) 824-6477 for additional information.

To assist students in becoming more effective leaders, the Office of the Dean of Students offers a variety of leadership programs and opportunities. The **All-University Leadership Conference** is the cornerstone of UCI's leadership offerings. This annual weekend program occurs off campus and involves more than 200 emerging and established student leaders representing the full diversity of campus interest groups. The **Winter Leadership Symposium** is a mid-year on-campus program that explores leadership issues relevant to club and organizational leaders. **Passport for the 21st Century** seminars provide a pathway for students who are interested in maximizing their potential as leaders. More than 30 seminars are offered annually. Topics range from leadership and diversity to effective communication and event planning. For those interested, the option is available to acquire a UCI Leadership Certificate.

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. Approximately 20 students annually are assigned to campus administrative departments where they develop programs and projects. Academic credit is earned through participation in a weekly seminar. Information is available from the Office of the Dean of Students in the UCI Student Center; telephone (949) 824-5182.

New Student Programs provides assistance and information to students who are in the process of being admitted to UCI and coordinates a variety of orientation programs. New Student Programs is located in the Office of the Dean of Students in the UCI Student Center; telephone (949) 824-5182.

The Office of the Dean of Students also handles **student discipline and individual grievances.** Information is provided in the *Student Handbook* and *Policies Applying to Campus Activities, Organizations, and Students,* which is available from the Office of the Dean of Students in the UCI Student Center; telephone (949) 824-5590.

A variety of other programs including the Welcome Week Fair, 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 (949) 824-5181; World Wide Web: http://www.dos.uci.edu/.

RESOURCE CENTERS

The Office of the Dean of Students provides support for a number of campus resource centers.

The **Cross-Cultural Center** 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 Week, Cinco de Mayo, and American Indian Culture and Education Days. In addition, the Center sponsors a Faculty-in-Residence program and faculty colloquia 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 (949) 824-7215; e-mail: caespino@uci.edu; World Wide Web: http://www.ccc.uci.edu/.

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 (949) 824-7494 (voice), 824-6272 (TDD); e-mail: ods@uci.edu; World Wide Web: http:// www.disability.uci.edu/.

The **International Center** provides services such as assistance with visa and immigration forms and the interpretation of government regulations to international students, permanent residents, refugees, international faculty members and scholars, and their families. The staff provides information about housing, tutoring, orientation, registration, financial aid, student activities, and referrals to other campus support services as necessary; for additional information telephone (949) 824-7249; World Wide Web: http:// www.ic.uci.edu/.

The **Lesbian, Gay, and Bisexual Resource Center (LGBRC)** fosters an inclusive and supportive campus climate for all students, staff, and faculty and hosts educational programs and workshops to raise campus and community awareness of LGB issues. LGBRC provides peer counseling, information and referral to campus and community resources, and leadership training and volunteer opportunities. It is open Monday through Friday, 9 a.m. to 5 p.m. and is located in Gateway Commons facing Aldrich Park; telephone (949) 824-3277; e-mail: plwalsh@uci.edu; World Wide Web: http://www.lgbtrc.uci.edu/.

The **Center for Women and Gender Education** offers programs to raise awareness of gender issues for women and men, as well as services designed to meet the special needs and interests of women. Programs include workshops on topics such as 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 (949) 824-6000; e-mail: plgoldsm@uci.edu; World Wide Web: http:// www.cwge.uci.edu/.

Health Education Center

The Health Education Center provides personal consults, resource information, and programming to support healthy lifestyle choices with a specific emphasis on sexual health, nutrition, fitness, substance-abuse prevention, tobacco-use prevention, and stress management. In partnership with the School of Social Ecology, Health Education offers a survey course on health-risk lifestyle issues called Health Education for University Life. Students interested in leadership opportunities in health can go on to become peer community health educators (a three-quarter academic course series) or earn units for volunteering in a variety of settings on campus and in the community. The Health Education Center is located in the UCI Student Center; telephone (949) 824-5806; World Wide Web: http://www.health.uci.edu/. Hours are 9 a.m. to 5 p.m., Monday through Friday.

Work and play: Verano Place residents planting trees as part of UCI's conservation program; an Arroyo Vista neighborhood football game; and Middle Earth residents on their way to class.

Housing

ON-CAMPUS HOUSING

Housing Administrative Services coordinates application procedures and contracts with on-campus residents. Approximately 31 percent of UCI's student body is housed on campus. For more information visit http://www.housing.uci.edu/ on the World Wide Web.

Undergraduate Housing

Mesa Court and **Middle Earth,** UCI's residence halls, house approximately 2,700 single undergraduate students under the age of 25. Each hall houses from 40 to 60 students, including a student resident assistant. The small-scale buildings provide excellent opportunities for social interaction, student government, and leadership experience. Each hall has distinctive characteristics and often focuses on a specific interest or life-style such as the arts, the humanities, the outdoors, or student diversity. The residences are divided into suites of four or five single-, double-, or triple-occupancy rooms, with living room and bath; each residence also contains a lounge and recreation and study rooms. Every room has carpeting, window coverings, a bed, desk, chair, closet, and bookshelves for each student.

Mesa Court and Middle Earth have complete food service and dining commons. Students who live in the residence halls participate in prepaid 14- or 19-meal-per-week plans. Meals are served cafeteria-style three times daily on weekdays (brunch and dinner on weekends), and the menu offers a wide selection of food. A registered dietician is available to assist students with 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 Mesa Court and Middle Earth Student Programs Offices have responsibility for providing residents with an environment conducive to their intellectual, social, and personal growth. Their staffs work closely with students to create opportunities for educational exploration and interpersonal skills development including such things as weekend field trips and retreats.

Charges for the 2000–2001 academic year (late September through mid-June) are $7,663–7,774 for a single room, $6,700–6,808 for a double room, and $5,860–5,968 for a triple room; rates include a $21 annual community association fee. An increase in cost is anticipated for the 2001–02 academic year. Charges are paid in quarterly payments.

Campus Village, an apartment community for single undergraduates under the age of 25, 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 Community Center, lounges, and recreation buildings. Rates for the 2000–2001 academic year, including utilities, are $2,769 per student for an unfurnished apartment and $3,093 per student for a furnished apartment. Campus Village also offers year-long (12-month) contracts. Current rates for this option are $3,688 per student for an unfurnished apartment and $4,129 per student for a furnished apartment. These rates also include utilities. An increase in rates for 2001–02 is anticipated.

Arroyo Vista Housing is an undergraduate community of 35 houses arranged in neighborhoods. The houses accommodate 16, 24, or 32 single undergraduates under the age of 25, making the total population of the community approximately 800. Two students share a furnished room, and all residents can enjoy the spacious living room with fireplace and the fully equipped kitchen.

More than two-thirds of the houses are designated Academic Theme Houses which 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 rate for the 2000–2001 academic year is $3,132 for a double occupancy room. An increase in cost is anticipated for 2001–02. A meal plan is not provided in the contract, but may be purchased separately.

The remaining houses are available to fraternity and sorority chapter organizations; consult individual Greek chapters for 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 2000–2001 is $130 per month per space. Although no new RVs may be moved into the park, some existing trailers are available for purchase. Trailers must contain a sink, hardware for running water, and a stove. Laundry facilities, showers, and restrooms are centrally located within the park. This housing option will not be available after July 31, 2004.

Quenya residence hall houses primarily first-year undergraduates, with a limited number of spaces reserved for single graduate students. Located within the Middle Earth residence hall community, Quenya is available during the *academic year only.* Each of the 60 single units is furnished with a bed, desk, bookshelf, and closet. Public areas include bathrooms, suite study rooms, kitchenettes, laundries, and sun balconies. Residents are required to purchase a 14- or 19-meal-per-week plan.

Graduate/Family Housing

The University has 862 one-, two-, and three-bedroom apartments in **Verano Place** for full-time, registered graduate students, and 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 are three- and four-story buildings in a setting of landscaped courtyards and pathways. The 203-unit complex is for full-time graduate students, medical residents, postgraduate researchers, and students with families.

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 UCI freshmen and all transfer applicants. 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. Students who do not receive application materials should telephone the Housing Office at (949) 824-7247; e-mail: housing@uci.edu.

On-campus housing in the fall is guaranteed for all new, single undergraduate students under the age of 25 who meet the housing application and contract return deadlines. To qualify for this guarantee, students must apply for housing and submit their Statement of Intent to Register (SIR) by May 1, 2001 (transfer students must submit their SIR by June 1, 2001). Applications received after these respective dates 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 12- to 16-month waiting list for these facilities.**

HOUSING IN THE COMMUNITY

The Housing Office also provides information and services to help new and returning 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 local apartment communities which includes information about rental prices, local realtors, budgeting expenses, roommate selection, and tenant/landlord rights and responsibilities.

Representative monthly rental prices for apartments (both furnished and unfurnished) in the local area in spring 2000 ranged from $675 for a studio to $1,500 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. The Housing Office is located in 209 Administration Building and is open from 8 a.m. to 5 p.m. weekdays; telephone (949) 824-7247; e-mail: housing@uci.edu; World Wide Web: http://www.housing.uci.edu/.

Dining That Fits

Students who live off campus or in UCI apartments may wish to take advantage of various campus dining options which enable them to eat meals in the residence halls. In 1999–2000, the 19-meal-per-week plan provided three meals a day, Monday through Friday, and brunch and dinner on weekends for $609.90 per quarter. Many other plans were available. Rates are subject to increase for 2000–2001.

Meal Punch Cards are also available for students who do not live in the residence halls. In 1999–2000, punch cards were available at $2.45 per punch, discounted to $2.35 per punch when more than 50 punches were purchased. Rates are subject to increase for 2000–2001. Breakfast costs one punch, lunch two punches, and dinner three punches. Contact UCI Residential Dining at (949) 824-4182 or visit http://www.housing.uci.edu/ on the World Wide Web for additional information.

UCI Student Center

The UCI Student Center is the destination for anyone at UCI who is looking for a place to study, use any of the public access computers located throughout the building, make travel arrangements, relax, be entertained, pick up a bite to eat, or shop for books, flowers, and clothing. Lounges include those for quiet study, group study, recreation, music listening, and television viewing. Eating establishments include the Cornerstone Cafe, 'Eaters Food Court (the Green Burrito, Rice Garden, Subway, Chicago Chicago Pasta & Pizza, Kikka Sushi, and Carl's Jr.), and the Anthill Pub & Grille. For additional information and hours of operation, telephone (949) 824-2419; World Wide Web: http://www.stcenter.uci.edu/.

Student Government

ASSOCIATED STUDENTS

The Associated Students of the University of California Irvine, better known on-campus as **ASUCI**, embraces all registered undergraduate students through student government, student activities, student advocacy, student publications, and special campus services. In addition to the general program responsibilities, the elected executives are fiscally responsible for overseeing the quarterly student fees that underwrite all general student body programs and services.

Annually elected student body officers and representatives work in conjunction with the professional staff at the general offices of the Associated Students in UCI Student Center Suite 200 (located directly behind the UCI Student Center Information Desk).

During academic quarters, ASUCI's Legislative Council meets Tuesdays and Thursdays, 5 to 7 p.m., in the UCI Student Center, and council meetings are open to all students. Learn about campus issues and student options by attending council meetings.

ASUCI Events include the annual Welcome Dance, Homecoming, Wayzgoose, and Reggaefest; AS Presents events such as noon programs, major concerts, comedy nights, and video showings; and senior services such as senior portraits, Senior Information Day, and Senior Class Picnic.

ASUCI Advocacy and Awareness Programs include Book Exchange, Disability Awareness, Elections, External Affairs, Parking and Transportation, Safety, Special Projects, Student Recommended Faculty Program (SRFP), and Visions, a 1.3-unit leadership and internship seminar course.

ASUCI Communications and Publications include *TEACH: Teacher Evaluation and Course Handbook; New Student Profile; Student Voice,* a bi-quarterly student government newsletter; *UCI Yearbook,* a Columbia Press Association Award-winning publication; and the ASUCI Web site at http://www.asuci.uci.edu/.

ASUCI Services include:

Club and Organization Accounting: The ASUCI Business Office provides banking and accounting services to registered campus organizations.

Shuttles: A full-service express shuttle (Monday through Friday) serves Balboa Island, Park West, and Newport, and two free on-campus shuttles transport students to various key locations at UCI. Schedules and shuttle passes are available at the ASUCI Information Desk.

Outroads Travel: Outroads is the only on-campus, full-service travel agency serving the special needs and budgets of students, staff, and faculty. The office is located just off the UCI Student Center Terrace in Room C201; telephone (949) 824-4237.

UCItems and UCI Photo I.D. Cards: UCItems is an on-campus specialty shop featuring electronic goods, Greek and club incidentals, silkscreening, discount entertainment tickets, and an eclectic selection of gifts. It is also the place where official Anteater I.D. cards are prepared and distributed. The store is located just off the UCI Student Center Terrace in Room C200; (949) 824-7555.

ASUCI Inquiries and Updates: The general offices of the Associated Students of UCI are located at 200 Student Center (directly behind the UCI Student Center Information Desk). For information regarding programs and services, call (949) 824-5547 or visit http://www.asuci.uci.edu/ on the World Wide Web.

ASSOCIATED GRADUATE STUDENTS

All graduate and professional school students are members of the Associated Graduate Students (AGS). AGS promotes and provides for the distinct needs and priorities of graduate students, and functions as a liaison between graduate students and the UCI administration, faculty, and staff by addressing concerns and working to resolve grievances. Call AGS at (949) 824-6351 for information.

AGS provides graduate students with numerous student-operated services including social and cultural events of benefit to the graduate community. It 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.

In partnership with the UCI Student Center, AGS also operates the Anthill Pub & Grille which offers food, beverages, and live entertainment at student-friendly prices.

The AGS Council nominates graduate students for positions on UCI administrative, Academic Senate, and ad hoc committees, and UC Office of the President committees. AGS representatives work with the UC Student Association and other campus organizations to advocate policies supportive of students and vital to the social needs of the community at large.

ASSOCIATED MEDICAL STUDENTS

The Associated Medical Students (AMS) Council, along with the AGS Council, represents the medical student body in all matters relating to the UCI campus, the UC Office of the President, and the community. Medical students are members of AGS and have access to those services. In addition, AMS utilizes a portion of the quarterly AGS fee to provide funding for medical student activities that benefit the College of Medicine community.

U See Eyes, a support club for future optometrists, is one of more than 275 campus organizations which encompass interests from academic to political, and from service to social.

GRADUATE SCHOOL OF MANAGEMENT STUDENT ASSOCIATION

The GSMSA Council, along with the AGS Council, represents the graduate Management student body in all matters relating to the UCI campus, the UC Office of the President, and the community. Graduate Management students are members of AGS and have access to those services. In addition, GSMSA uses a portion of the quarterly AGS 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 part-time study are eligible to access services at the Student Health Service, located at the corner of East Peltason and Pereira Drive. Facilities and services include outpatient clinics staffed by certified, licensed medical professionals; nurses with expertise in college health; a clinical laboratory; radiology; and a pharmacy. General medical clinics are held from 7:30 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 optometry, dental, mental health, dermatology, gynecology, women's health, men's health, orthopaedics/sports medicine, ear/nose/throat, urology, and minor surgery. A nurse clinic is available to provide immunizations, health screening, and basic health education.

Health care services are available beginning on the first day of Welcome Week in the fall and continuing through the last day of finals week in June. All students are encouraged to submit an updated physical examination record to Student Health (see Physical Examination and Health Clearance, next page) which will enable them to access the medical clinics at reduced fees. Those who do not have a physical examination on file will need to pay a fee to see the medical practitioner, and may arrange to have a physical examination done later. *All* students pay for their laboratory, medication, x-rays, surgical, and mental health visit fees, whether or not they have a physical examination on file. Those

with medical insurance may submit a claim to their insurance plans for reimbursement. Services at Student Health are affordable, and fees are generally lower than those of comparable services in the community. Payment plans may be arranged. Medical history and physical examination packets are mailed to new and readmitted students as their names become available to the Student Health Service. Medical students receive their packets from the College of Medicine Admissions Office. International students' packets are mailed by the Office of International Services with their initial registration forms.

An optional insurance plan covering major medical occurrences for undergraduates, spouses, and children, including coverage for the summer or one registered 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 Service 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 (949) 824-7093.

Physical Examination and Health Clearance. All new students and students returning to UCI after an absence of two or more quarters are required to file a completed medical history, proof of tuberculosis screening, and proof of mandatory immunizations with the Student Health Service. All students are strongly encouraged to have a physical examination to screen for health problems. The examination may be performed by the student's own physician, but must be documented on the form provided by Student Health Service. The physical examination can also be performed at the Student Health Medical Clinic for a fee. Students transferring from another UC campus where their medical records are on file should have the records transferred to the UCI Student Health Service.

The Medical Clinics at Student Health Service provide as many services as possible at nominal or no charge; however, some services are available only on a fee-for-service basis. These include most immunizations; physical examinations for school, employment, or insurance; laboratory tests; x-rays; prescriptions; medical procedures and supplies; and minor surgery. Professional counseling, psychological, and psychiatric services are available through the Student Health's Mental Health Division for a fee; the cost varies based on the level of professional services provided. Eye and dental care are available on a fee-for-service basis to students and their spouses. Call (949) 824-5304 for an appointment.

INTERCOLLEGIATE ATHLETICS AND CAMPUS RECREATION

Intercollegiate Athletics

UCI's Intercollegiate Athletic Program features 20 sports, with 10 men's teams, nine 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 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, volleyball, and water polo, which is in its initial year at the University. Beginning in academic year 2001–02, men's baseball will return to UCI, along with an additional one or two women's sports.

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 42 Big West conference championships since 1977. Each spring, the University presents the Big West Scholar-Athlete Award to those student-athletes who maintained a 3.0 GPA over the previous three quarters. In the last 17 years, 1,634 UCI student-athletes have earned the award.

The mission of UCI Intercollegiate Athletics is to facilitate and enrich the education and personal growth of its students through their participation in competitive NCAA Division I athletics. Intercollegiate Athletics is committed to the welfare of student-athletes and staff, and advocates an environment that promotes excellence in athletic and academic performance, sportsmanship, diversity, and gender equity. Intercollegiate Athletics also supports the University of California's mission of public service and serves to generate a unifying spirit among students, faculty, staff, and alumni that transcends communities, cultures, and generations.

The Intercollegiate Athletic offices are located in Crawford Hall; telephone (949) 824-6931.

ATHLETIC FACILITIES

On-campus facilities include the Bren Events Center, which seats 5,000 for intercollegiate basketball, and Crawford Hall, the home of UCI Athletics. In addition to supporting the University's training and student-athlete academic support services, Crawford Hall gymnasium seats 1,000 for volleyball. Outdoor facilities include the Anteater Stadium, a 2,500-seat facility for soccer and track, and the 12-court, 500-seat Tennis Stadium. Additional facilities include Anteater Field, which will be home to the baseball program when it returns to UCI in 2001–02, and a five-acre multipurpose field complex.

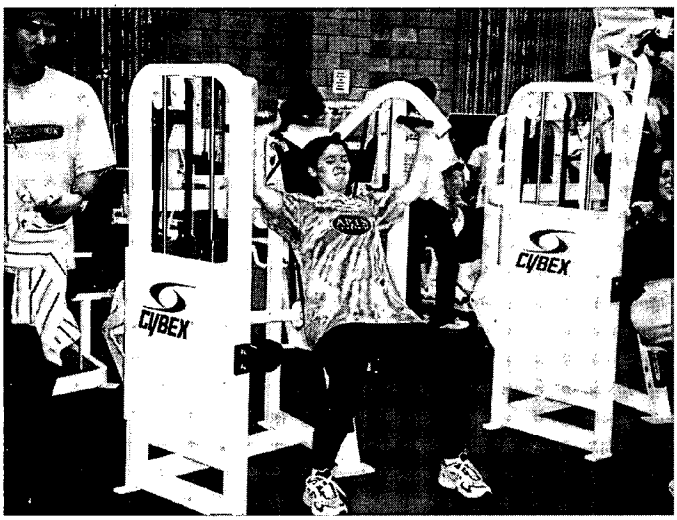
In the spring of 1999, UCI opened the $3-million, 64-meter Anteater Aquatic Complex to house the intercollegiate water polo, swimming, and diving teams. This new aquatics facility is designed with a movable bulkhead and is large enough to accommodate multiple activities simultaneously.

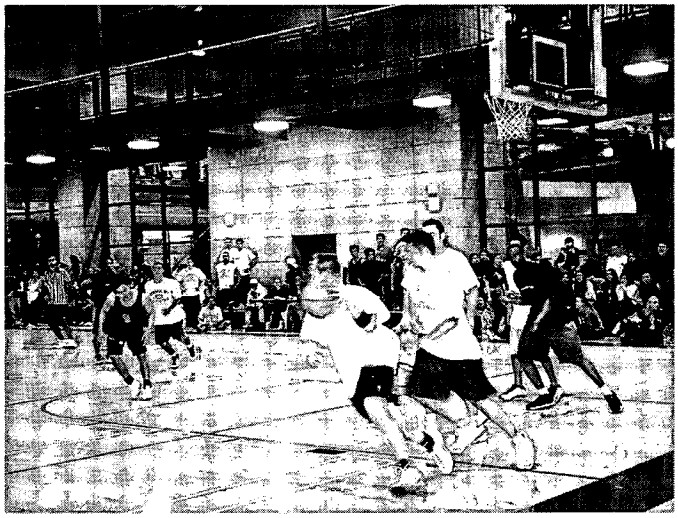
Campus Recreation

Campus Recreation provides UCI students, faculty, and staff with an opportunity to enhance their campus experience by developing and maintaining a physically active lifestyle through informal recreation, noncredit instruction, intramural sports, club sports, fitness, and sailing opportunities. Most of these programs are offered in the new Anteater Recreation Center and at Crawford Hall.

The Anteater Recreation Center (ARC), opened in January 2000, is a complete state-of-the-art sports and fitness facility. The construction and operation of ARC have been funded through student fees. Registered students have access to the facilities with current UCI identification and are not required to pay any additional membership fee. Faculty and staff may purchase ARC memberships.

Informal Recreation is the facility time made available to serve the diverse needs of the UCI community on a drop-in basis. The facilities in and around ARC are the primary location of these opportunities, which include use of the 10,000-square-foot weight room with 141 cardiovascular and weight machines, and more than 15 tons of free weights, lap and free swimming, racquetball, table tennis, badminton, basketball, volleyball, indoor soccer, and jogging on the indoor track.





Recreational noncredit instruction classes include martial arts, fitness, sports classes, and specialty classes. Martial art classes include Karate, Judo, Tai Chi, Iaido, Wushu, and Kung Fu. Drop-in opportunities in fitness range from basic step aerobics, jogging, weight training, and party dancing, to cardio cycling, hip hop, yoga, and massage. Sports activities vary from the classic "lifetime" sports such as tennis, golf, volleyball, and softball to specialty sports like rock climbing, ice skating, and fencing. Classes are taught by members of UCI's Division I coaching staff along with expert specialty instructors.

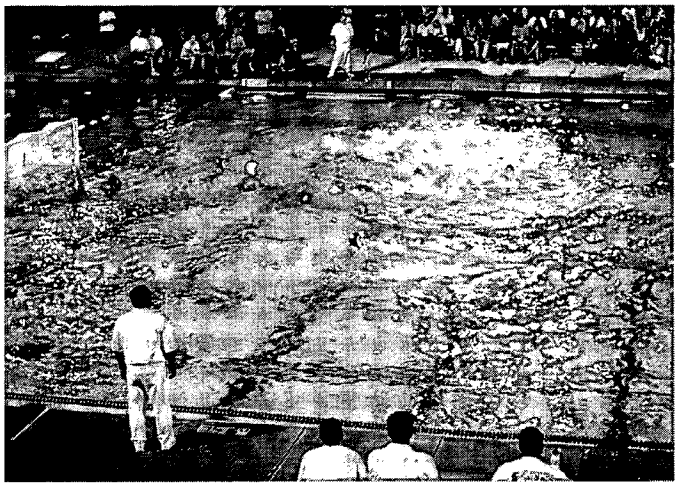
Intramural sports activities feature men's, women's, and co-rec team sports, and many special events and tournaments. Team sports include basketball, flag football, floor hockey, indoor soccer, soccer, softball, and volleyball. Special events and tournaments include badminton, swimming, table tennis, tennis, track and field, and wrestling. The emphasis is on participation, and activities are offered at all ability levels from novice to advanced. Registration begins on the first day of each quarter. Participants may sign up as a team or as individuals.

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' Lidos and 30' Shields. Weekend and weekday classes are offered throughout the year. Through the Sailing Club (UCISA), students and other members of the UCI community may check out boats for personal use. This club is available for eligible participants who complete a basic proficiency test and pay a nominal fee.

Club sports are for students interested in competing in sports not offered through Intercollegiate Athletics. 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, cycling, cricket, fencing, golf, roller hockey, rugby, table tennis, volleyball, water polo, and surfing. 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.

All UCI students and ARC membership holders may register and participate in the preceding activities. Up-to-date information, including hours of operation, and class schedules are available in the quarterly *Recreation Release* and on the Campus Recreation Web site at http://www.campusrec.uci.edu/. Equipment such as basketballs, volleyballs, racquets, and other items may be checked out on a daily basis from Gear Up; telephone (949) 824-6401.

Additional information is available from Campus Recreation Services, 680 California Avenue; telephone (949) 824-5346.



The Anteater Recreation Center's Fitness Laboratory and Backcourt Gym, the Anteater Aquatic Complex, and Crawford Field.

RESEARCH AND GRADUATE STUDIES

William H. Parker, **Vice Chancellor for Research and Dean of Graduate Education**

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 Education 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 programs that facilitate student and faculty diversity within graduate education at UCI.

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.

Additional information is available on the World Wide Web at http://www.rgs.uci.edu/.

RESEARCH

A primary mission for UCI is faculty research and scholarship, which plays a valuable role in the education of both graduate and undergraduate students. UCI has established national and worldwide visibility in traditional disciplines such as physics and chemistry, which have earned two Nobel Prizes, along with "new" interdisciplinary pursuits. In the Humanities, UCI has become a center in critical theory. Biological and biomedical investigators conduct both basic science and clinical research in areas such as neuroscience, molecular biology, genetics, and cancer. Engineering specialties include electrical, computer, mechanical, aerospace, civil, and biochemical research.

An emerging focus for UCI is informatics, the application of computer and information technology to benefit research, scholarship, and education in other disciplines. Information and Computer Science faculty members have formed collaborative partnerships to intensify the use of informatics in other departments in areas such as bioinformatics and digital arts.

The Vice Chancellor for Research has responsibility for research policy, research development, animal research administration, UCI-industry relations, and research administration, which includes submission of grant proposals and negotiation and administration of awards. The Vice Chancellor also encourages new research initiatives and administers UCI's organized research programs, interdisciplinary groups of faculty pursuing unique problems that cross departmental and school boundaries.

Office of Technology Alliances

The Office of Technology Alliances (OTA) fosters research partnerships and transfers of technology between UCI and industry that lead to rapid commercialization of research results for the public benefit. Specific services for faculty include assistance with invention disclosures, patentability assessment, technology marketing and licensing, industry-sponsored research collaborations, biological material transfer agreements, and copyrights and trademarks. Specific services for business and industry include access and linkages to faculty researchers (http://www.faculty.uci.edu/), licensing technology, assistance with research contracts, intellectual property, research materials transfer, and technology information. OTA makes many of its services available over the Internet at http://www.ota.uci.edu/.

University of California Humanities Research Institute

The University of California Humanities Research Institute (HRI), located at UCI, was founded in 1987 to serve as the humanities center for the nine campuses of the University of California. HRI'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. An advisory committee represents each campus and advises the HRI director on programs.

At the heart of HRI's activities are the Residential Research Groups, which bring together both UC and non-UC scholars and advanced UC graduate students to work in collaboration on interdisciplinary topics. HRI also offers the possibility of multiyear 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.

HRI sponsors scholarly conferences both at the Institute and on the nine UC campuses, as well as seminars and workshops for a variety of planning purposes. In addition, HRI works with the University of California Press to publish work from its conferences and residential groups. Scholarly work done under the auspices of HRI has also appeared under a variety of other imprints.

Faculty who wish to propose research projects, conferences, workshops, disciplinary forums, or other programs should contact the University of California Humanities Research Institute, 307 Administration Building, Irvine, CA 92697-3350; telephone (949) 824-8177; e-mail: UCHRI@uci.edu.

University of California Institute for Research in the Arts

The University of California Institute for Research in the Arts (UCIRA) is a funding program for the visual and performing arts of the UC system. Primarily dedicated to multicampus collaborations, UCIRA supports artistic production and critical discourse in all creative genres. UCIRA provides grants to faculty and students for such projects as exhibitions, performances, symposia, and outreach efforts. As artistic endeavors of the highest professional caliber, UCIRA projects frequently reach audiences outside the University and involve artists and scholars from around the world. As the only statewide organization representing the arts on all campuses of the UC system, UCIRA also provides information and advocacy for university-based arts education and research.

UCIRA moved to the UCI campus in summer 1998 and is located in the offices of the Humanities Research Institute. The proximity to the Institute is significant in enabling collaborative programs between the arts and the humanities. UCIRA funding is divided into three general categories: Special Projects, Demonstration Projects, and Community Arts. The Special Projects program provides support of up to $25,000 for major collaborative projects from a wide range of disciplinary and interdisciplinary perspectives. Special Projects are expected to significantly impact students and faculty from at least two campuses. They may consist of one or more specific events or activities including, but not limited to: festivals, symposia, joint productions, and exhibitions. The Demonstration Projects program offers support of up to $5,000 for performing tours, exhibitions, residencies, master classes, and planning future UCIRA events. Additionally, the Demonstration Projects program encourages artists and scholars from diverse disciplines to develop ideas and approaches which extend the conventional limits of arts research at the University of California. The Community Arts program supports innovative projects that engage UC artists with community constituencies outside the UC system. Community Arts are defined to encompass any activity in which the arts are applied, disseminated, or interpreted for a specified constituency. This funding category has been developed in response to the dramatic increase in experimental outreach research by UC artists, and the need to foster increased connectivity between UC arts programs and their surrounding communities. UCIRA seeks to address these issues by supporting projects that can have a significant effect within a specific community or that can serve as models for outreach efforts.

All UCIRA grants must involve two or more UC campuses. For more information see the UCIRA Web site at http://ucira.arts.ucla.edu.

Thesaurus Linguae 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 comprehensive digital library of Greek literature; 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 in excess of 75 million words of Greek text and essentially all ancient Greek literary texts from Homer to A.D. 600, as well as a large number of texts deriving from the period between A.D. 600 and 1453. Data entry continues with the aim of including later periods of Greek literature.

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 Thesaurus Linguae Graecae has made UCI a major source of Classics research activity.

Organized Research Units

Organized Research Units (ORUs) normally consist of an interdepartmental group of faculty, students, and other researchers engaged in a continuing program of multidisciplinary or interdisciplinary research, supported by both University and extramural funding. The work of some ORUs is directed toward the solution of complex contemporary problems, while others conduct basic research essential to the understanding of natural or social phenomena or of humanistic ideas and expressions. The following ORUs 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 UCI's Chao Family Comprehensive Cancer Center, a National Cancer Institute-designated comprehensive cancer center. Other units of the center include 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 (CNLM), founded at UCI in 1983, is a multidisciplinary research institute that fosters and supports collaborative research on the brain processes underlying learning and memory. CNLM's research teams consist of faculty, professional and postgraduate researchers, graduate and undergraduate students, and visiting scholars. They investigate the formation, maintenance, and retrieval of memory at several levels of analysis—from studies of molecular and cellular processes in the brain to studies of memory in animal and human subjects.

Current research projects include investigations of the role of specific genes in memory formation, how neurons organize and communicate to enable learning and memory, the way experience alters the structure and organization of the brain, how we retrieve short- and long-term memories, and emotional influences on memory formation. State-of-the-art techniques, including computer modeling of neural processes and imaging of brain system activation, are used. The Center's basic research has important implications for understanding and treating human disorders and diseases of learning and memory.

CNLM organizes seminars and colloquia throughout the year, as well as periodic workshops and international conferences for the neuroscience community. In addition, it sponsors programs for local schools and the general public, including a lecture series on health issues related to brain and memory.

CNLM members include faculty from the UCI Departments of Neurobiology and Behavior, Cognitive Sciences, Psychiatry and Human Behavior, and Anatomy and Neurobiology, as well as faculty from several other UC campuses and the University of Southern California. CNLM is located in the Bonney and Qureshey Research Laboratories of the Herklotz Research Facility.

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 on 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 (GSM), the Department of Information and Computer Science (ICS), the School of Social Sciences, and the Department of Education conduct research through the unit. There are approximately 12 faculty associates and 20 students involved in research administered by CRITO.

CRITO was recently designated by the National Science Foundation (NSF) as one of six Industry-University Information Technology Research Centers in the United States. Though there are more than 50 NSF Research Centers across the country, including the six focusing on information and technology, CRITO is the only one of the national centers to focus on the social and economic impact of information technology.

The first such NSF center at UCI, CRITO brings together nationally prominent UCI faculty with researchers from participating corporations to study the impact of new information technologies—computers, telecommunications, multimedia, and the Internet—on business, consumers, and the workplace.

CRITO's research projects also reflect a multidisciplinary nature. Ongoing research includes: nationwide study of computers and educational reform in schools; nationwide study of computers, multimedia, and the Internet in the home; cross-national study of the payoffs from investments in computers; national study of the effects of computers on firm performance in Fortune 1000 companies; the impacts of computing on work groups; interorganizational systems and knowledge management; IT structuring for e-commerce and measurement standards of consumer satisfaction; the effects of IT on training, employee performance, and quality of work life; and studies of the global spread of production and use of computers and the Internet. Faculty research also involves computer support systems for group collaboration; informatization of society; and estimation of market potential for IT.

In support of these research programs, CRITO sponsors regular seminars among faculty, students, and members of the business community; 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. 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 that focuses on the theoretical underpinnings of such fields as history, literature, philosophy, art, anthropology, politics, and cultural studies. The Institute's principal function is to create a forum for debate among competing movements in contemporary critical theory. The work of the Institute encompasses not only the application of theory to data but also a self-reflexive investigation of theoretical presuppositions in order to produce alternative theoretical models, methodologies, and research strategies.

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 interest in the concept of "culture" in various kinds of critical theory and cultural study in recent years. The results of this research project have been published as *"Culture" and the Problem of the Disciplines,* edited by John Carlos Rowe (Columbia University Press, 1998).

The Institute pursues three- to four-year research projects on announced topics, such as the recently completed "The Forces of Globalization" (1995–1999), and the newly proposed "The Futures of Property and Personhood." Research projects involve collaborations between Institute members and scholars from around the world. The resulting collections of essays are published by Columbia University Press. The Institute also sponsors the annual René Wellek Library Lectures, inaugurated in 1981. Every spring quarter, a distinguished scholar delivers three public lectures on a topic relevant to the field of critical theory. The Wellek Lectures are published by Columbia University Press as an ongoing series. Mini-conferences, reading and discussion groups, work-in-progress meetings, and one-time lectures by international scholars are among other activities sponsored by the Institute.

In recent years, the Institute has established connections to distinguished institutions and scholars around the world and is beginning to plan collaborative international projects on a regular basis. The first collaborative event, an international conference entitled "The States of Theory: China and the West," will take place in Beijing in the summer of 2000 and is co-organized by the Critical Theory Institute and Beijing Language and Culture University.

DEVELOPMENTAL BIOLOGY CENTER

The Developmental Biology Center (DBC) is an Organized Research Unit providing focus and support for research in developmental biology in several departments of the School of Biological Sciences and the College of Medicine. DBC investigators are focusing their research on understanding how cells cooperate during development to control the growth and development of the body. This involves study of 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. In support of these research programs, DBC manages shared facilities for confocal microscopy, computer-based image processing and analysis, cell sorting and analysis, and single-cell

microinjection. These facilities are part of the Optical Biology Shared Resource of UCI's Comprehensive Cancer Center. DBC administers training grants to support both graduate students and postdoctoral investigators, and Program Project grants supporting research in multiple laboratories. DBC sponsors regular seminars; organizes local, national, and international conferences; and hosts visiting scientists for collaborative research. The results of the work will contribute to understanding normal development and growth control as well as abnormalities that lead to birth defects, cancer, and nervous-system malfunction in the human body. Research in several of the laboratories is contributing to efforts to learn how to stimulate the regrowth of tissues and organs and to produce tissues for reconstructive surgery. Additional information is available on the World Wide Web at http://mamba.bio.uci.edu/~pjbryant/dbc/index.htm.

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. 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 and a State of California Department of Health Alzheimer's Disease Research Center.

Faculty from the Departments of Neurobiology and Behavior, 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 models and 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, Political Science, 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; the Department of Electrical and Computer Engineering in the Henry Samueli School of Engineering; and the Graduate School of Management.

INSTITUTE FOR SOFTWARE RESEARCH

The Institute for Software Research (ISR) is dedicated to fostering innovative basic and applied research in software and information technologies. To achieve this goal, ISR works with established companies, start-ups, government agencies, and standards bodies to develop and transition technologies to widespread and practical application. The Institute also focuses on educating the next generation of software researchers and practitioners in advanced software technologies. It supports the public service mission of the University of California in developing the economic basis of the State of California.

Technical emphases of the Institute include software architecture, hyperware, Internet protocols and standards, Internet infrastructure and applications, software processes, workflow, computer-supported cooperative work, human-computer interaction, software understanding, analysis and testing, extensible systems, distributed object technologies, configuration management, configurable distributed object technologies, configuration management, configurable distributed systems, and mobile code.

Faculty members are drawn from throughout the University of California. Graduate research assistants, professional research staff, and visiting researchers complete the Institute's research body.

ISR supports research projects, sponsors professional meetings, develops technology, and provides support for focused Research Centers within the Institute. To further its research agenda, the Institute sponsors technical roundtables held at UC Irvine addressing software and information technologies, technical Bay Area roundtable (BART) meetings held in the Silicon Valley, workshops, symposia, and special events.

Effective partnerships with industry are essential for ISR to achieve its goals of technology development and transition. Corporate and institutional sponsorships support ISR's research, activities, and professional meetings.

Information about the Institute for Software Research is available on the World Wide Web at http://www.isr.uci.edu/.

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 Multicampus 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 Henry Samueli School of Engineering, the

Schools of 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; activity-based travel demand analysis; 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, a Federally designated center for transportation research. The Center for Activity Systems Analysis (CASA) within the Institute supports research directed toward the development of activity-based approaches to travel behavior analysis. 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 worldwide.

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, and in the Interdisciplinary Program in Transportation Science, are available for students interested in transportation studies. ITS 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. IRUs 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.

ANIMAL VIROLOGY

The Program in Animal Virology combines basic science and clinical faculty in the Departments of Ecology and Evolutionary Biology, Molecular Biology and Biochemistry, and Neurobiology and Behavior in the School of Biological Sciences, and the Departments of Biological Chemistry, Microbiology and Molecular Genetics, Neurology, 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 Comprehensive Cancer 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, including laboratory facilities for work with recombinant virus for gene therapy. It also sponsors a seminar series, symposia, and laboratory training for postdoctoral fellows and graduate students in animal virology and viral-based gene therapy.

GLOBAL PEACE AND CONFLICT STUDIES

The IRU in Global Peace and Conflict Studies (GPACS), housed in the School of Social Sciences, draws affiliated faculty from the humanities, Social Ecology, and the natural sciences. The goals of GPACS are: (1) to support interdisciplinary research on the sources, modes, interpretation, and management of conflicts among states and peoples; (2) to promote graduate and undergraduate education in these areas; and (3) to disseminate the knowledge generated within the larger scholarly and UCI communities.

GPACS research focuses on three themes, each of which is at the core of a cross-disciplinary working group: international environment, globalization and governance, and security and peace building. GPACS also awards individual faculty grants and graduate fellowships.

In addition, GPACS sponsors a public forum series and specialized research seminars. GPACS publications include an annual student journal and a series of working papers.

HEALTH POLICY AND RESEARCH

The IRU in Health Policy and Research (HPR) is a multidisciplinary unit that provides an environment for collaboration among health policy researchers at UCI. Through its shared research space, seminars, and workshops, HPR creates an atmosphere of synergistic creativity for faculty, staff, and students from diverse academic backgrounds. Interaction among the members often results in innovative multidisciplinary research proposals. HPR's staff assists in the development and submission of the proposals and administration of the contracts and grants that result from them.

HPR has 22 members from four units: the College of Medicine, the Graduate School of Management, and the Schools of Social Ecology and Social Sciences. Their areas of expertise include anthropology, biostatistics, community health, epidemiology, family medicine, general internal medicine, geriatrics, psychology, marketing, medical economics, medical education, medical ethics, sociology, pediatrics, and public health. HPR also provides an educational environment for undergraduate and graduate students to learn how to conduct health policy research.

The goals of the IRU are: (1) to facilitate collaboration among UCI faculty participating in health policy research; (2) to disseminate research findings; (3) to provide education and training opportunities to undergraduate and graduate students regarding health policy research; and (4) to support the research efforts through extramural support. Areas of research emphasis include childhood injury prevention and control particularly among Latino children, cancer prevention and control among various special populations, health care delivery and organization, cost effectiveness and health priorities, post-traumatic stress, and medical education.

MACROMOLECULAR STRUCTURE

The IRU in Macromolecular Structure ties together UCI investigators who utilize modern methods of macromolecular structure determination as a critical part of their research program. The IRU serves as the focal point for further development of Structural Biology at UCI. An essential function of the IRU is to coordinate multi-investigator research proposals, graduate student recruitment, seminar programs, and course development.

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 group is recognized as a Focused Research Program.

SOUTHERN CALIFORNIA LABOR STUDIES

Twenty faculty and graduate students from the Schools of Humanities, Social Ecology, and Social Sciences who share a strong interest in the interdisciplinary study of labor have created a research niche at UCI to focus on the multifaceted experiences of the working class. The FRP in Southern California Labor Studies seeks new paradigms for understanding the global changes currently reconstructing and reshaping the work, community, and culture of working people, particularly in Southern California. The participants, each with distinction in their respective fields, seek to develop innovative approaches to understanding the forces that modify labor processes and working peoples' lives. Several activities, including a speakers series, seminars, seed grants, and conferences are sponsored by the FRP.

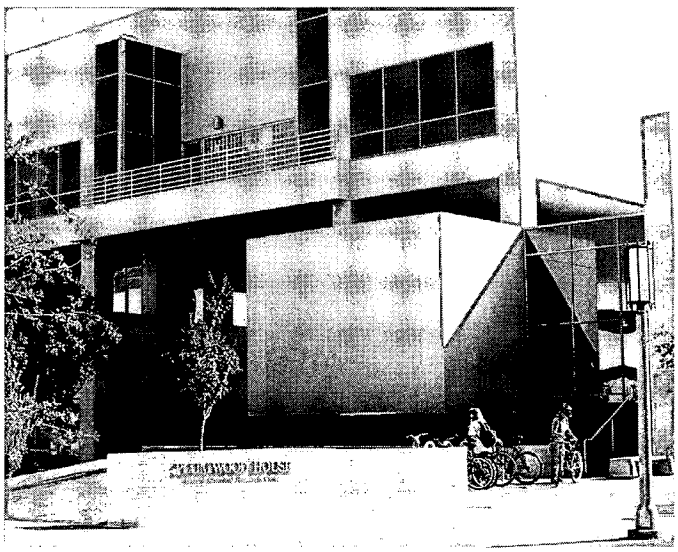
GRADUATE EDUCATION

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 education.

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 (949) 824-6761; World Wide Web: http://www.rgs.uci.edu/.

The University of California recently reaffirmed that a diverse student and faculty population is integral to academic excellence and is critical to promoting the lively intellectual exchange and the variety of ideas and perspectives that are essential to advanced scholarly research. The University remains committed to expand outreach, recruitment, and retention efforts. Through the Graduate Diversity Program, steps are taken to increase the participation of diverse groups who may be disadvantaged in graduate education in the United States.

It is the goal of UCI's Office of Graduate Studies to award fellowships to a diverse group of students. Diversity fellowships for new and continuing graduate students are based on demonstrated scholastic achievement, full-time status, and U.S. citizenship. Although Proposition 209 prohibits selection based on race, gender, ethnicity, religion, or national origin, socioeconomic and educational limitations can be considered. Each academic department identifies those students whose background and life experiences can enhance the level of diversity within the department or discipline.



The Plumwood House (Hitachi Chemical Research Center) includes basic research programs in neurological disorders, diagnostic systems and reagents, and industrial bioreactors.

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/. 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. (Please note, however, that the application fee for the Graduate School of Management is $75.) Payment instructions are available in both the electronic and paper versions of the application. Need-based application fee waivers are available for domestic students.

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 (949) 824-6761, or send e-mail to ogsfront@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 (949) 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 in 96 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)

Applicants whose primary language is not English are required to submit TOEFL scores for admission consideration. However, the TOEFL requirement will be automatically waived for applicants who have received an advanced degree from a U.S. college or university.

A computer-based TOEFL test is now available, as well as the paper-based test. Please note that the scales used for scores for the two tests are significantly different. For the paper-based test, a score of 550 or better is required for admission consideration. For the computer-based test, a score of 213 or better is required. (The Graduate School of Management requires a minimum paper-based test score of 600, or 250 for the computer-based test.)

The paper-based TOEFL test should be taken at the earliest available date to allow scores to be reported in time to meet application deadlines. Score results from the computer-based test are available much more quickly. Results of institutional administrations of the TOEFL or test results which are more than two years old are not acceptable. Applicants must ask the Educational Testing Service to forward scores directly to the UCI Office of Research and Graduate Studies.

Information about the TOEFL is available from the Educational Testing Service, P.O. Box 6151, Princeton, NJ 08541-6151, USA.

TEST OF SPOKEN ENGLISH (TSE)

All applicants whose primary language is not English and who wish to be considered for a Teaching Assistantship (TA) appointment must take the Test of Spoken English (TSE) and pass with a score of 50 or above. The TSE is given six times during the year at TOEFL test centers around the world. Information may be obtained by writing to the Test of Spoken English, P.O. Box 6157, Princeton, NJ 08541-6157, USA. 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 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

Drama students working on M.F.A. projects in the Costume Shop, School of the Arts.

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 if applicable, one-half the Nonresident Tuition Fee and one-half the Professional School Student Fee.

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 after the term has ended. Although eligible for all normal student services, the exchange student is a visitor and is not formally admitted to graduate study at the host campus. Application forms for the Intercampus Exchange Program may be 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 and submit an original transcript. The acceptance of unit credit earned in another program must be recommended by the academic unit to which the student has been admitted and be approved by the Dean of 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 $65 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 on the World Wide Web at http://www.lib.uci.edu/rrsc/tdmanual.html.

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.

NONRESIDENT TUITION

Following advancement to candidacy, doctoral students who are not California residents will have their Nonresident Tuition Fee reduced by 75 percent for a period of up to three years. Any such student who continues to be enrolled or who re-enrolls after receiving the reduced fee for three years will be charged the full Nonresident Tuition Fee that is in effect at that time.

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.

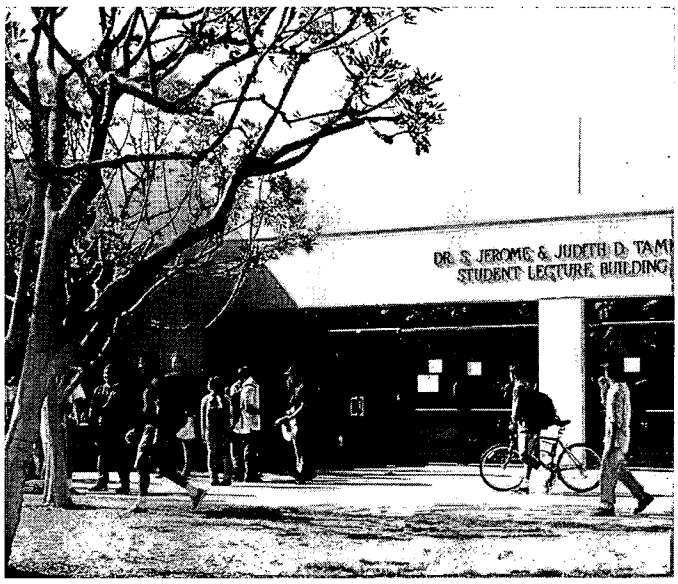
Students are advised by mail when their diplomas are available, which is approximately six months after the quarter in which the degrees are awarded.

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, and student loans.

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 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.



The Tamkin Student Lecture Building, College of Medicine

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 Diversity Program, a number of diversity fellowships and assistantships are awarded to entering and continuing graduate students who may be disadvantaged in higher education in the United States. Departments nominate candidates on the basis of their merit and contribution to the diversity of the department or discipline. Individuals from diverse cultural, geographic, and socioeconomic backgrounds are especially encouraged to apply to UCI's graduate programs. In conformance with State law, applicants may not be given preferential treatment on the basis of race, ethnicity, gender, religion, or national origin.

SCHOOL OF THE ARTS

Jill Beck, **Dean**

Arts Student Affairs
101 Mesa Arts Building; (949) 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, which includes a minor in Digital Arts. Both undergraduate and graduate degree programs are offered and include extensive studio, workshop, and performing experiences; theoretical and historical studies; and work in arts and technology and criticism.

The School's departments are located near each other, facilitating daily interaction among student and faculty in all Arts disciplines. Facilities include studios and classrooms, four theatres, a concert hall, the University Art Gallery, the Donald R. and Joan F. Beall Center for Art and Technology, the Visual Resources Collection, the Gassmann Electronic Studio, the Motion Capture Studio, the Arts Media Center, the Arts Computing Laboratory, the Digital Arts Teaching and Research Laboratories, a television studio, and professionally managed and staffed theatrical production shops and publicity and box offices supporting the School's extensive production and performance schedule.

Arts students regularly participate in choirs, instrumental ensembles, drama and dance productions, and art exhibitions. Qualified students from other academic areas also are eligible to participate in many of these activities and are encouraged to do so. 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

Arts Interdisciplinary	B.A.
Dance	B.A., B.F.A., M.F.A.
Drama and Theatre	Ph.D.*
Drama	B.A., M.F.A.
Fine Arts	M.F.A.†
Music	B.A., B.Mus., M.F.A.
Studio Art	B.A., M.F.A.

*UCI and UCSD joint program.

†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 DIGITAL ARTS

The Minor in Digital Arts is geared toward students with computer skills who want a grounding in the arts. This program allows students to acquire a working knowledge of digital imaging and related technological skills within an arts context. See page 94 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.

CAMPUSWIDE HONORS PROGRAM

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; telephone (949) 824-5461; e-mail: honors@uci.edu; World Wide Web: http://www.honors.uci.edu/.

EDUCATION ABROAD PROGRAM

Upper-division, and in some cases graduate, students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. See the Education Abroad Program section for additional information.

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 51).

ArtsBridge Program

Among the first of its kind in the nation, the UCI ArtsBridge program provides scholarships of up to $3,000 per year and hands-on opportunities for talented, energetic UCI students to become "artists-in-residence," bringing arts education to schools and other community venues. Linking with a range of subjects in the K–12

curriculum, ArtsBridge reestablishes art programs in elementary and secondary schools where arts education has been greatly reduced or eliminated. UCI student-scholars bring drama productions, instrumental workshops, musical theatre, photography, painting, dance, and storytelling classes to local schools as well as to other community-based institutions such as libraries and hospitals. The program also serves to cultivate an appreciation for the value of arts in society and to develop the creative and analytical skills of both the artist-teachers and the students. The program provides a unique opportunity for students to augment and diversify their learning experience outside the classroom, as well as to prepare them for a job market that increasingly requires the creativity of artists. The ArtsBridge program is open to all majors and minors in the School of the Arts, by application and/or audition.

Scholarships

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.

Edna Helen Beach Scholarship: Provides $1,000 per year for two years for an incoming freshman student, and $1,000 for one year for an incoming transfer student. Recipient must be gifted and talented, and will be selected from eligible students with special emphasis on those from underprivileged backgrounds who would not otherwise be able to attend a major research institution.

Jill and Robert Beck Scholarship: $4,000 to an outstanding Dance major.

Bret Beilin Memorial Scholarship: Various $1,000 awards for Music majors in any instrument or voice.

Carol Stefanik Caniglia Dance Scholarship: $5,000 scholarship for an outstanding Dance major transferring from a community college to UCI.

California China Painters Art Association Scholarship: $1,000 awarded annually to an outstanding artist.

Dunnicliffe Scholarship: $500 awarded to a Drama major based on excellence and financial need.

Leo Freedman Graduate Fellowship: For outstanding applicants from Orange County, California, preferably from Anaheim; $7,500 covers tuition and fees and includes a small stipend. Two fellowships for two years of graduate study.

Ann and Gordon Getty Foundation Scholarship: $500–$1,250 awarded to a Music major in any instrument or voice.

William J. Gillespie Foundation Scholarships: Several scholarships in varying amounts, awarded to outstanding Dance majors.

Laguna Beach Festival of the Arts Foundation 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.

Alice Lowell Memorial Scholarship: Up to $5,000 awarded to a Music major in any instrument or voice.

Steve Lyle Memorial Scholarship: $1,000 awarded to continuing students in Drama; selected by application and recommendation.

Marilyn Lynch Dance Scholarship: Up to $5,000 awarded to an outstanding Dance student.

Molly Lynch Scholarship: $5,000 awarded to an outstanding undergraduate Dance major.

Mary and Phillip Lyons Scholarship: Up to $5,000 awarded to a Music major in any instrument or voice.

Carol McGahan Memorial Scholarship: Up to $1,000 for continuing Dance majors selected by the Dance faculty scholarship committee.

Philharmonic Society of Orange County Scholarship Program: All recipients are selected by the UCI Music faculty scholarship committee through an audition process.

Ladislaw Reday Memorial Scholarship: $1,250 awarded to a Music major in any instrument or voice.

David Lee Shanbrom Memorial Music Scholarship: $3,000 awarded to an outstanding Music student in any instrument or voice.

Winifred W. Smith Music Scholarship: $2,500 awarded to a student with stringed instrument specialization.

Marcella Louise and Leonard Seiber Jones Music Scholarship: $1,250 awarded to an incoming Music student in any instrument or voice.

Timothy Phillips Memorial Scholarship: Provides $2,000 annually to a Music major.

Frank and Nancy Posch Scholarship: $1,000 awarded to an outstanding Drama student.

Marjorie and Robert Rawlins Scholarship: Provides several $5,000 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 Ann Slim Memorial Scholarship: Provides up to $1,500 annually to a Music student.

Winifred W. Smith Scholarship: $5,000 awarded to a student studying cello, violin, or piano (preferably cello). Renewable if student meets scholarship criteria.

Elizabeth and Thomas Tierney Scholarship: Provides five $4,750 awards annually: one in each of the School of the Arts departments plus one awarded at the discretion of the Dean.

UCI Town and Gown Music Scholarships: Up to $2,000 annually; awarded to Music students in any instrument or voice.

Phyllis Kovach Vacca Memorial Scholarship: $2,500 scholarship for a student studying cello, piano, or violin.

Undergraduate Program

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

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 artists literate in both traditional and digital media who are responsive to intellectual stimuli, disciplined, and capable of integrating existing knowledge into creative projects. The UCI-UCSD joint doctoral program in Drama and Theatre provides opportunity for significant crossover research and teaching between the two campuses in a wide range of areas in drama and the theatre. It is the strong belief of the UCI

School of the Arts that intellectual integrity and creative excellence cannot exist without each other.

ADMISSION TO THE PROGRAM

Applications are accepted for fall quarter admission only, and ordinarily must be completed by March 1 for all the Master of Fine Arts degrees and January 15 for the doctoral degree, 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; (949) 824-6646

Faculty

Stephen Barker, Ph.D. University of Arizona, *Professor of Drama*

The program in Arts Interdisciplinary is designed for undergraduate students who wish to investigate particular issues in specific 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 an individual course of study with the approval of the Director or an appropriate advisor. Because the 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. The program leads to a B.A. degree in Arts Interdisciplinary.

The University's Education Abroad Program may be of particular interest to the Arts Interdisciplinary major. Centers emphasizing study 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.

MINOR IN DIGITAL ARTS

The minor in Digital Arts is geared toward students with computer skills who want a grounding in the arts. This program allows students to acquire a working knowledge of digital imaging and related technological skills within an arts context. It provides the tools necessary to understand the basic aesthetic components of the new digital media, relating digital arts to traditional art forms. These tools range from a basic understanding of "art" to sophisticated applications of state-of-the-art computer software, in various forms of art production including CD-ROM, digital video and photography, Web site and other network applications, installations, and more.

For entry into the minor, students must show ability to use e-mail, surf the net, and use productivity tools such as word processing or spreadsheets. It is highly recommended that students in the minor have their own computer. Additional information is available on the World Wide Web at http://www.arts.uci.edu/saffairs/.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: None.

Program Requirements

Three one-year surveys in three different areas of the arts selected from Art History 40A, B, C, Dance 90A-B-C, Drama 40A, B, C, Music 14A-B-C, Music 40B-C-D, or Studio Art 10A, 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 Lit. WR39A	Foreign Language	Foreign Language
	English and Comp. Lit. WR39B	English and Comp. 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.

REQUIREMENTS FOR THE MINOR IN DIGITAL ARTS

The Minor in Digital Arts consists of a minimum of eight courses which fall into three categories: I. Required, II. Elective (background), and III. Elective (applied).

I. Required: Arts Interdisciplinary 1A-B-C (Arts Core).

II. Elective (background). At least two of the following: Dance 21A (Music for Dancers); Dance 30A (Ballet I), Dance 40A (Modern Dance I), or Dance 50A (Jazz I); Dance 110 (Ethnic Dance); Studio Art 20 (Basic Drawing); Studio Art 30 (Basic Painting); Studio Art 71 (Basic Photography); Studio Art 81 (Basic Video); Drama 30A (Acting); Drama 50A (Introduction to Costume Design), Drama 50B (Introduction to Scenic Design), or Drama 50C (Introduction to Lighting Design); Music 25 (Fundamentals of Music); two quarters (4 units) of any of the music performance ensembles (Music 7, 160, 161, 162, 171, 173, 174, 175, 176, 178).

III. Elective (applied). At least three of the following, *one of which must be from the Digital Imaging group (either Studio Art 65 or Arts 50):* Studio Art 65 (Basic Digital Imaging: Photography), Studio Art 106 (Interactive Digital Media: Sound and Video), Studio Art 110 (Interdisciplinary Digital Arts), Studio Art 166 (Advanced Collaborative Project), Studio Art 175 (Digital Art Aesthetics), Music 51 (Music Technology and Computers), Music 151 (Computer Music Composition), Arts 50 (Multimedia Arts), Drama 158 (Studio in Theatre Design), Dance 180A (Laban Studies).

Each of these courses may be taken one time only for credit toward the minor. No course in the Elective (applied) requirements may be taken Pass/Not Pass.

Courses in Arts Interdisciplinary

LOWER-DIVISION

1A-B-C Arts Core (4-4-4) F, W, S. An introduction to the arts in general, and to the arts at UCI. Concentration on (1) the interdisciplinary nature of the arts, (2) the content of particular arts disciplines, and (3) the departments in the UCI School of the Arts. **(IV)**

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.

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

100A-B-C The Senior Thesis (4-4-4) F, W, S. Planning, drafting, writing, and presentation of an academic thesis. Open to Arts Interdisciplinary majors, who will interrelate two or more artistic disciplines, and to Campuswide Honors Program students, who will focus their thesis on one or more major areas in the Arts. Prerequisite for 100B: 100A. Prerequisites for 100C: 100B and satisfactory completion of the lower-division writing requirement.

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.

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.

199 Independent Study (1 to 4) F, W, S. Individual study or directed projects as arranged with faculty member. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

DEPARTMENT OF DANCE

301 Mesa Arts Building; (949) 824-7283
James Penrod, **Department Chair**

Faculty

David Allan, Choreographer/Former Soloist, National Ballet of Canada; Choreographer, ballet companies, operas, film, and television, *Associate Professor of Dance* (ballet, pas de deux, choreography)

Jill Beck, Ph.D. City University of New York, *Dean of the School of the Arts and Professor of Dance* (dance notation and reconstruction)

Don Bradburn, Former Dancer/Choreographer, Columbia Broadcasting System (CBS-TV), *Lecturer in Dance* (ballet, choreography, video choreography, dance photography)

Mary Corey, M.A. University of California, Riverside, Certified Professional Labanotator, *Professor of Dance* (dance history, modern dance, notation and reconstruction, dance and digital technology)

Diane Diefenderfer, Former Soloist, Los Angeles Ballet, Eglevsky Ballet Company, Frankfurt Ballet Company, Technique, *Lecturer in Dance* (ballet, pointe)

Israel "El" Gabriel, Former Assistant Artistic Director, Bat Dor Dance Company of Israel, *Lecturer in Dance* (ballet, modern, pas de deux, repertory)

Donald McKayle, Choreographer/Director, concert, theatre, film, television, *Graduate Choreography Advisor, Artistic Director of UCI Dance, and Professor of Dance* (choreography, modern dance)

Lisa Marie Naugle, M.F.A., New York University, Tisch School of the Arts, *Assistant Professor of Dance* (modern dance, choreography, dance and digital technology)

James Penrod, M.F.A. University of California, Irvine; C.M.A. Laban Institute of Movement Studies, *Associate Dean of the School of the Arts, Department Chair, and Professor Emeritus of Dance* (ballet, modern, dance notation, choreography, movement analysis)

Janice Gudde Plastino, Ph.D. University of Southern California, *Professor of Dance* (modern, kinesiology/anatomy, research methods, choreography, dance science/medicine)

Barbara Bailey Plunk, Former Dancer/Choreographer, M.G.M., NBC-TV, Board of Directors American School of Dance, *Lecturer in Dance* (ballet, pointe, teaching of dance, 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, *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.A. Eastman School of Music, *Associate Dean of the School of the Arts and Associate Professor of Dance* (musical resources, music for dancers, dance accompaniment, composition, multimedia arts)

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 Metropolitan Opera Ballet, San Francisco Ballet, Nashville Ballet, and Ballet Pacifica); in modern dance companies (including Hubbard Street Dance Company, MOMIX, and Martha Graham Dance Ensemble); in touring companies (including *Phantom of the Opera, Fame: The Musical, Carousel,* and *Cirque du Soleil*); and in films, television, and theatre.

In addition to training for professional dance performance and choreography, the major in dance serves as a basis for graduate study or job opportunities in fields such as dance history, dance science, dance pedagogy, dance reconstruction, dance criticism, 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 with a specialization in Choreography is by faculty approval only.

The B.F.A. program with a specialization in Performance does not require additional faculty approval beyond the required audition for admission to the Dance major; students should declare their intention to pursue this specialization during spring quarter of their sophomore year.

Proficiency Levels

In addition to meeting the general requirements for admission to UCI, applicants must demonstrate technical/creative promise. The Department holds annual entrance auditions for potential freshmen and transfer students during winter quarter prior to the fall quarter when entrance is anticipated. First-year students wishing to major in Dance must be at technique level II in at least one of the three major genres (ballet, modern, jazz).

Placement auditions for admitted students are held during Welcome Week to determine levels of technical ability for placement in courses. It is suggested that transfer students wishing to pursue a B.A. degree in Dance complete, in addition to their breadth requirements, one course in choreography, two courses in dance technique, and one course in music for dancers prior to transfer to UCI.

Previously admitted majors who wish to obtain a B.F.A. degree must notify the School of the Arts Student Affairs Office during the spring quarter of their sophomore year. Admission to the B.F.A. Choreography specialization requires the submission of an application which may be obtained from the undergraduate advisor in Dance. Students applying for this specialization must have completed or be in the process of completing Dance 60A-B-C.

Transfer students wishing to pursue the B.F.A. degree must declare their intention in writing at the time of their entrance audition and demonstrate technique and/or choreography levels appropriate to their year. It is suggested that transfer students complete, in addition to their breadth requirements, one course in choreography, two courses in dance technique, one course in music for dancers, and one course in dance performance prior to transfer to UCI.

Students deficient in level of performance or academic preparation should be prepared to extend their studies beyond the normal four-year program in order to meet the requirements for graduation.

REQUIREMENTS FOR THE B.A. DEGREE

University Requirements: See pages 54–59.

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 *or* A, C (Laban Studies); Dance 185 (Philosophy, Aesthetics, and Criticism).

Technique: Students must complete at least one Dance technique course (ballet, modern dance, jazz, Spanish, ethnic dance, or Dance 103 [Body Conditioning and Alignment]) 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 ballet, jazz, and modern technique courses beyond the required amount do not count toward departmental elective requirements but may count toward University requirements.

Performance: Two performances from any of the Dance 170 series; four units of Drama 101 (Theater Production), taken during the first year in residence.

Electives: 12 units of electives must be completed within the major.

REQUIREMENTS FOR THE B.F.A. DEGREE

University Requirements: See pages 54–59.

School Requirements: None.

Departmental Requirements for the Major

Students must complete the departmental requirements as listed for the B.A. degree in Dance. In addition, B.F.A. students must complete the requirements for either the specialization in Choreography or Performance.

Choreography Specialization: Dance 60B-C (Choreography I); Dance 127A (Costume Design for Dance); Drama 30A (Acting); Drama 50C (Lighting Design); any three quarters of courses chosen from Dance 162A-B-C (Choreography II) and Dance 164A-B-C (Video Choreography); two courses in Dance 165 (Choreographic Projects—one original choreographic work, approved by the faculty, must be presented in both the junior and senior years); four units (one or two courses) in Art History, Music, Studio Art, or Drama (in addition to Drama 30A, Drama 50C, and Drama 101 requirements).

Performance Specialization: *Technique:* Dance 134A-B-C (Ballet IV) *or* Dance 135A-B-C (Ballet V) *or* Dance 144A-B-C (Modern IV); Dance 153A-B-C (Jazz III); Dance 139 (Partnering).

Performance: Dance 137 (Repertory) or Dance 179 (Etude Ensemble); Dance 170 series: must be in three additional performances beyond the B.A. requirements, *and* must perform at least once in Dance 170, 171, 172, and 174; Drama 30A (Acting) or a fourth additional performance in the Dance 170 series. Dance 171 and 172 may be repeated for credit. Students must demonstrate proficiency in at least two dance genres in these performances.

Sample Program for Freshmen (B.A. and B.F.A. Programs)

Fall	Winter	Spring
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, video choreography, dance training, dance history, dance science, dance reconstruction, and dance and digital technology.

Admission

Applicants for admission to the degree program must meet the general requirements for admission to graduate study and hold a B.A. or B.F.A. in Dance or the equivalent. Candidates must meet the minimum requirements for the B.A. degree in Dance at UCI. 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, 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, 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.

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) *or* Proseminar in Dance Ethnology (Dance 298).

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.

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.

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.

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. Pass/Not Pass only.

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. Pass/Not Pass only. 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 30A-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. Pass/Not Pass only. May be taken for credit twice.

50A-B-C Studio Workshop in Jazz I (2-2-2) F, W, S. (50) Summer. Fundamentals of jazz: principles of jazz dance and contemporary forms incorporating the personal point of view of the instructor. Pass/Not Pass only. May be taken for credit twice.

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.

80 Introduction to Dance (4) F, W, S. Survey of nineteenth- and twentieth-century ballet, modern dance, and theatre dance. For non-majors only. Dance 80 and Dance 90A-B-C may not both be taken for credit. **(VII-B)**

81 Dance Cultures of the World (4). A survey of selected world dance forms, focusing on social and cultural context. **(VII-B)**

90A-B-C Dance History A, B, C (4-4-4) F, W, S. 90A: Introduction to non-western dance. Dance in the western tradition from prehistory through the Middle Ages. **90B:** The history of dance in the western tradition from the Renaissance through the nineteenth century. **90C:** The history of dance in the western tradition: the twentieth century. Dance 90A-B-C and Dance 80 may not both be taken for credit. **(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. Prerequisite: Dance 100.

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.

104 Health and Injury in High-Impact Activity (4). Develops skills in the evaluation and management of dance and athletic injuries. Instruction is provided to prepare the advanced student trainer for certification by the National Athletic Trainers Association. Prerequisite: consent of instructor.

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.

112A-B-C Studio Workshop in Spanish Dance II (2-2-2) F, W, S. Intermediate Spanish dance including movement, techniques, castanet work, rhythms, and continued development of flamenco, folk, classical, and neoclassical styles and forms. May be 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.

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. Beginning and intermediate pointe work; principles of Classical tradition developed from Noverre, Petipa, and Cecchetti. Emphasis on basic pointe techniques and performance styles. Prerequisites: Dance 132A-B-C. May be taken for credit three times.

132A-B-C Studio Workshop in Ballet II (2-2-2) F, W, S, (132) Summer. Intermediate ballet: principles of Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 30A-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 (2) F, W, S. 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 30A-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 40A-B-C or audition. 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.

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 50A-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.

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.

170 Dance Performance (1 to 4). Rehearsal and performance in a faculty-choreographed production. By audition only. May be taken for credit twice.

171 Dance Workshop (1 to 4) F, W, S. Rehearsal and performance in a student-choreographed production. By audition only. May be taken for credit three times.

172 Master of Fine Arts Concert (1 to 4). Rehearsal and performance in a graduate student-choreographed production. By audition only. May be taken for credit three times.

174 UCI Dance Ensemble Performance (1 to 4). Performance with the UCI Dance Ensemble. Prerequisite: consent of instructor. May be taken for credit twice.

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.

179 UCI Etude Ensemble (2) F, W, S. Repertory and performances by undergraduate Dance majors. Concert presentations on and off campus. Faculty directed, student/faculty choreographed. By audition only. Pass/Not Pass only. May be taken for credit three times.

180A, B, C Laban Studies (4, 4, 4) F, W, S. 180A: Elementary Labanotation and introduction to Laban Writer software. **180B:** Intermediate Labanotation and work with Laban Writer software. **180C:** Laban movement analysis and motif writing. Prerequisites: Dance 21A and 132A-B-C or consent of instructor; Dance 180A is required for 180B.

185 Philosophy, Aesthetics, and Criticism of Dance (4) S. Introduction to comparative aesthetic and philosophical theories of dance; application of philosophical and critical analysis to dance performances. Prerequisites: satisfaction of the lower-division writing requirement and Dance 90A-B-C.

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.

197 Independent Study (1 to 4) F, W, S. Individual independent projects in experimental laboratory, library, field, performance, under instructor's direction. Students can receive conceptual, creative, and theoretical instruction in the successful completion of a written report or performance. Prerequisite: consent of instructor. May be repeated for credit.

199 Senior Thesis (4) F, W, S. Directed research or creative activity for senior Dance majors. Research consists of a substantial essay on dance history, research in dance science, or the creation of original or reconstructed choreography. Pass/Not Pass only. May be repeated for credit.

GRADUATE

NOTE: Some courses are not offered every year. Please check with the Department advisor.

201 Seminar in Kinesiology for Dance (4) F. Brief introduction to biomechanics, physiology of exercise and equipment, movement principles, and their application to dance techniques. Prerequisite: Dance 290.

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.

221 Graduate Music for Dancers (4) W. Detailed analysis of the various relationships between music and dance; structural, harmonic, and orchestrational analysis; developing kinesthetic rhythmic acuity; enriching musical communicative skills. Formerly Dance 221A.

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.

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.

281A-B Dance and Digital Technology (4-4) F, W, S. 281A: Interactive multimedia. **281B:** Continuing work and more complex projects in interactive multimedia for dance.

282 Seminar in Movement Analysis (4) W, S. Theories of movement analysis and nonverbal communication applied to dance.

283 Philosophy, Aesthetics, and Criticism (4). Discussion of aesthetics and philosophy as they specifically apply to dance. Cross-cultural comparisons and advanced critical skills are presented. Written critiques and descriptive analyses are required. Prerequisite: Dance 284.

284 Bibliography and Research (4) F. Survey and practice of primary and secondary research methods in dance including electronic searches. Development of writing for presentation, publication, and thesis essay.

285 Graduate Projects (4). Projects may be educational, choreographic, scientific, historical, or philosophical in scope and must have faculty advisor approval. May be taken for credit six times.

286 Thesis (4). Substantial research in a topic approved by the student's graduate committee. Results of the research must be written in approved thesis style. Prerequisite: consent of department. May be taken for credit six times.

287 Graduate Lectures in Dance (1 to 4). A series of lectures and discussions of announced topics in dance. Content may be from history, ethnology, notation, medicine, music, or other areas in the field. Prerequisite: consent of instructor. May be repeated for credit as topics change.

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.

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. May be taken for credit twice.

297 Directed Reading (1 to 4). Topic to be approved by instructor. Paper required. Prerequisite: consent of instructor. May be repeated for credit.

298 Proseminar in Dance Ethnology (4). Seminar in dance ethnology fieldwork. Readings in ethnographic theory and method complement the design, enactment, and analysis of a field study.

399 University Teaching (1 to 4). Limited to Teaching Assistants. Prerequisite: consent of instructor. May be repeated for credit.

DEPARTMENT OF DRAMA

249 Drama Building; (949) 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, *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* (scenic design)
Keith Fowler, D.F.A. Yale University, *Associate Professor of Drama and Head of Directing* (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* (scenic design)
Julie Haber, M.F.A. Yale University, *Lecturer in Drama* (stage management)
Cameron Harvey, M.F.A. University of California, Irvine, *Department Chair, Professor of Drama, and Head of Theatre Design* (lighting design, production)
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, *Professor of Drama* (costume design)
Annie Loui, *Associate Professor of Drama* (movement)
David McDonald, Ph.D. Stanford University, M.F.A. Yale University, *Associate Professor of Drama and Head of Playwriting* (critical theory, dramatic literature, and playwriting)
David Pecoraro, M.F.A. Temple University, *Lecturer in Drama* (stage management)
Bryan Reynolds, Ph.D. Harvard University, *Assistant Professor of Drama* (critical theory, performance studies, Renaissance drama)
Thomas Ruzika, M.F.A. University of California, Irvine, *Lecturer in Drama* (lighting design)
Mahlon Schanzenbach, M.A. California State University, Long Beach, *Lecturer in Drama and Music* (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)
Robert Weimann, Ph.D. Humbolt University (Germany), *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 54–59.

School Requirements: None.

Departmental Requirements for the Major

An introductory course in production theory (Drama 10); one year in acting (Drama 30A-B-C); one year survey in the development of dramatic literature (Drama 40A, B, C); three courses in design (Drama 50A, B, C); 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. Lit. WR39C
English and Comp. Lit. WR39A	English and Comp. 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 for sophomore-level transfer students and native UCI students are: (1) at least one year in good standing as a UCI Drama major; (2) completion of Drama 130A-B and at least one section of either Drama 135 or Drama 165, all at UCI; (3) honors students must possess and maintain an overall GPA of at least 3.2, with a GPA of 3.4 or higher in all acting courses; (4) performance in at least three official Drama at UCI productions (including mainstage, stage 2, stage 3, workshop, or cabaret); (5) completion of all Drama 101 (Theatre Production) assignments; and (6) completion of the eligibility form.

The eligibility requirements for junior-level transfer students are: (1) one year in good standing as a UCI Drama major; (2) completion of Drama 130A-B at UCI; (3) honors students must possess and maintain an overall GPA of at least 3.2, with a GPA of 3.4 or higher in all acting courses; (4) completed performance in at least one official Drama at UCI production (including mainstage, stage 2, stage 3, workshop, or cabaret); (5) completion of four out of eight units of Drama 101; and (6) completion of eligibility form.

A student's audition will determine final admission to the Honors in Acting program. Only truly exceptional students, no more than 10 to 20 percent of those eligible, will be admitted. The Honors auditions, for eligible candidates only, are held at the end of fall quarter and by special arrangement. Auditions will consist of a standard presentation.

Honors in Acting Program students receive: (1) the "Honors in Acting" notation on their official transcript; (2) nomination and recommendation for national University/Resident Theatre Association (U/RTA) auditions; (3) eligibility, on a space available basis, for South Coast Repertory Theatre internships, currently available only to M.F.A. students; (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.

Honors in Directing

The Honors in Directing Program provides the opportunity for Drama majors to concentrate on the study and practice of stage direction. Honors in Directing students study basic and advanced directing techniques, participate in the Directing Laboratory with graduate Directing students, take a course in directorial themes and/or the history of directing, and direct two full plays in the Drama Workshop series. Honors students also have the opportunity to receive credit as the assistant director of a Stage 1 or Stage 2 Department show; as a production internship with a professional theatre company; or for production/direction responsibility with the Playwright's Workshop.

Admission to the Honors in Directing Program is competitive. Candidates must first complete Drama 170 (Directing) with a grade of B or higher, which qualifies them to enroll in Drama 185 (Advanced Directing). Candidates must apply, as a director, for Drama 198 (Drama Workshop) by submitting a proposal to direct a play in the Drama Workshop series. If the proposal is accepted, the candidate must declare to the Head of Directing that the production is to be counted as an audition for admission to the Honors in Directing Program. A committee of three Drama faculty members, including the Head of Directing, will then see and evaluate the production for clarity of interpretation, unity of style, strength of acting, and ensemble performance, and will examine the candidate's self-evaluation and the evaluations of the director by members of the cast. The Head of Directing will inform the candidate of the committee's decision as to whether or not the candidate is admitted to the Honors Program.

Undergraduate Drama majors can be admitted into the program as early as the winter quarter of their freshman year but no later than the spring quarter of their junior year. Students may be admitted to the program retroactively if all the requirements for Directing Honors have been met by their final year, but only if a faculty committee of three has seen their workshops and agrees to admit the candidate.

To achieve the Honors in Directing distinction, students must fulfill all the courses required of the regular Drama major, with an overall GPA of 3.2 or higher. In addition, students must complete the following courses with a GPA of 3.4 or higher:

1. Drama 170 (Directing). This course is taught each year in the fall quarter only.
2. Two courses in Drama 185 (Advanced Directing). Drama 185 is offered annually in winter quarter and sometimes in spring quarter. In this course, undergraduate Directing students present work in the Directing Laboratory along with graduate Directing students.
3. Two Drama Workshops, one of which must be taken as Drama 198 (Drama Workshop) with the candidate serving as director. The candidate must stage a second Drama Workshop as Drama 199 (Projects in Theater), for which a letter grade is earned.
4. Four additional units to be satisfied by any of the following: Drama 199 (as a summer internship, approved by the Head of Directing, with the candidate serving a professional theatre company as director, assistant director, or production assistant); Drama 199 (as a production/directing project for Playwright's Workshop); Drama 100 (as assistant director to a faculty director of a Stage 1 production); or Drama 199 (as assistant director to a graduate director's thesis production).

Honors candidates meet with the Head of Directing at the beginning of every quarter to evaluate their progress and to check that all grade and course requirements are being satisfied. Successful graduating seniors will receive the "Honors in Directing" notation on their official transcript.

NOTE: All of the above courses are open to all students even though they may not qualify for the Honors Program.

Honors in Music Theatre Program

The Honors in Music Theatre Program is a unique series of courses which provide advanced training in scene study, song interpretation, dance, voice, acting, audition technique, and study in the history of the American musical. Performance experiences vary from fully staged musicals to intimate revues. Honors students are introduced to Broadway performance techniques through the Advanced Music Theatre Workshop and the New York Satellite Program (a four-week intensive series of master classes held in New York during the month of May).

Admission to the Honors in Music Theatre Program is competitive. After completing the prerequisite, Drama 165 (Music Theatre Workshop II), candidates may audition for the Honors Program. This audition will assess the student's proficiency at singing, dancing, and acting along with music reading skills at the piano. Auditions are scheduled twice each year: once during orientation week and again during finals week of the fall quarter. Undergraduate Drama majors can be admitted into the program as early as the fall quarter of their freshman year but no later than the fall quarter of their senior year.

Students in the Honors in Music Theatre Program need to fulfill all the courses required of the regular Drama major with the following qualifications and additions:

1. The two upper-division courses in Dramatic Literature must be satisfied with Drama 148A and 148B (History of American Musical Theatre). (This course is taught during the fall and winter quarters every other academic year. Junior transfer students who enter UCI during the year in which the course is offered will need to enroll in the course during their first fall quarter before actually qualifying for the honors program).

2. The three upper-division courses in Drama must be satisfied with Drama 166A, B, C (Music Theatre Workshop III). (Semi-private voice lessons will be offered in special laboratory sessions exclusively for the honors candidates.)
3. The two Dance classes must be satisfied by taking two quarters of ballet. (May be taken Pass/Not Pass.)
4. Additional required courses: Drama 35 (Speech for the Theatre); Drama 100 (University Theatre; specifically, a musical production); Drama 130A (Advanced Acting); Drama 146 (New York Music Theatre Workshop; winter and spring quarters); Drama 147 (Music Theatre Dance); Drama 149 (Music Proficiency for Actors; this course is waived if the student already possesses basic keyboard reading skills); one quarter of tap and one quarter of jazz (Dance Department).
5. Honors candidates must possess and maintain an overall GPA of 3.2 or higher, with a GPA of 3.4 or higher in the courses required for the Honors Program.

Honors candidates will meet with the head of the Music Theatre Program at the beginning of every quarter to evaluate their progress and to check that all grade and course requirements are being satisfied. Successful graduating seniors will receive the "Honors in Music Theatre" notation on their official transcript.

NOTE: Except for Drama 149 and the voice lessons offered in the laboratories of Drama 166A, B, C, all of the above courses are open to all students even though they may not qualify for the Honors Program.

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.

A total of 108 quarter units in graduate or approved upper-division undergraduate courses must be completed with a grade of at least B in each course. Specific course requirements must be satisfied in one of the following 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 (selected from various topics offered in Drama 219); one seminar in script analysis and research (Drama 235); three courses in development of theatre (Drama 120A, B, C)—faculty program head may approve substitutions depending on student's prior academic experience; two seminars in dramatic literature, performance theory, criticism, history of theatre, or contemporary theatre (Drama 220–223, 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.

DOCTORAL DEGREE PROGRAM

The UCI Department of Drama and the UCSD Department of Theatre and Dance offer a joint doctoral program leading to the Ph.D. degree in Drama and Theatre.

Preparation

Students with a B.A. (minimum GPA of 3.5), M.A., or M.F.A. degree in Drama and Theatre are eligible for admission to the doctoral program. Students with training in literature (or another area in the humanities) will also be considered, provided they can demonstrate a background in drama or theatre. Experience in one of the creative activities of theatre (acting, directing, playwriting, design, dramaturgy) enhances a student's chances of admission.

All applicants are required to take the Graduate Record Examination and to submit samples of their critical writing.

While not required for admission, a working knowledge of a second language is highly desirable (see Language Requirement).

Course of Study

Students are required to take a minimum of 144 units, which is equivalent to four years of full-time study (full-time students must enroll for a minimum of 12 units each quarter). Forty of these units are taken in required seminars; the balance is made up of elective seminars, independent study and research projects (including preparing the three qualifying papers), and dissertation research. Students must take a minimum of one seminar per year in the UCSD Department of Theatre and Dance. The program of study makes it possible for students to take a significant number of elective courses and independent studies both with faculty in Drama and Theatre and in other departments.

Required Courses

Students must take a minimum of 12 units (three seminars) each of Drama 290 (Dramatic Literature and Theatre History Prior to 1900) and 291 (Dramatic Literature and Theatre History, 1900 to Present), and 16 units (four seminars) of 292 (Cultural and Critical Theory).

All graduate courses may be repeated when the topic varies. Descriptions of the topics to be treated in a given academic year are published by the Department in the fall. Enrollment in each course requires the consent of the instructor. The courses are limited to registered doctoral students.

These 10 required seminars must be completed by all students, including those who have an M.A. or an M.F.A. degree, before the end of the third year. In addition, students must pass comprehensive examinations at the end of their first and second years.

Drama 293 (Directed Studies) and 294 (Dissertation Research) are also required.

Comprehensive Examinations

In the first year, students prepare for the Written Comprehensive Examination, which is based on a reading list of approximately 150 titles ranging from the Ancient Greeks to the present. Students take this examination at the beginning of the fall quarter of their second year. (Comprehensive examinations are scheduled at the beginning of fall quarter in order to allow students the summer to prepare.) Students who fail the Written Comprehensive may retake it no later than the first week of winter quarter of their second year. Students who fail the Written Comprehensive for a second time are dismissed from the program.

In their second year, students prepare for the Oral Comprehensive Examination. The reading list for this examination is designed to permit students to acquire a knowledge of their dissertation subject area, broadly conceived. The reading list is compiled by the student and the dissertation advisor, in consultation with other members of the faculty, as appropriate; the reading list must be established by the end of winter quarter of the second year. Students take the Oral Comprehensive at the beginning of the fall quarter of their third year. Students also submit a dissertation prospectus (approximately five pages) when they take this examination. Students who fail the Oral Comprehensive may retake it no later than the first week of winter quarter of their third year. Students who fail the Oral Comprehensive for a second time are dismissed from the program.

Advancement to Candidacy: Three Qualifying Papers

Students normally select a dissertation advisor during their second year and must do so before the end of spring quarter of that year. In consultation with the dissertation advisor and other faculty members, students develop topics for three qualifying papers, which are written during their third year. The three qualifying papers—one long (approximately 50 pages) and two short (approximately 30 pages each)—must be completed by the end of the third year; these completed papers provide the basis for the Oral Qualifying Examination. Students write the long paper under the direction of their dissertation advisor; it is understood that the long paper is preparatory to the dissertation. The short papers deal with other related topics, subject to the approval of the student's advisors; the two short papers are understood as engaging in exploring the larger contexts of the dissertation. Students normally pass the Qualifying Examination and advance to candidacy at the end of their third year; students must advance to candidacy no later than the end of fall quarter of their fourth year. Once advanced to candidacy, students write their dissertation which, upon completion, is defended in a final oral examination.

Students may select a dissertation advisor from either the UCI Department of Drama or the UCSD Department of Theatre and Dance. All UCI doctoral dissertation committees must include at least one faculty member from UCSD.

Language Requirement

Students are required to complete an advanced research project using primary and secondary material in a second language (materials may include live and/or recorded performance; interviews with artists, critics, and scholars; and other non-documentary sources, as well as more conventional textual sources). This requirement may be satisfied by writing a seminar paper or a qualifying paper (see Advancement to Candidacy above) that makes extensive use of materials in a second language. The second-language requirement must be satisfied before the end of the third year. This requirement will not be waived for students who are bi- or multilingual; all students are required to do research-level work in more than one language.

It is assumed that students will have acquired a second language before entering the doctoral program, although second-language proficiency is not a requirement for admission. While students may study one or more second languages while at UCI or UCSD, language courses may not be counted toward doctoral program requirements.

Teaching

Students are required to teach a minimum of four quarters. No more than eight units of apprentice teaching may be counted toward the required 144 units.

Departmental Ph.D. Time-Limit Policies

Students must advance to candidacy by the end of the fall quarter of their fourth year. Departmental normative time for completion of the degree is five years; total registered time in the Ph.D. program at UCI or UCSD cannot exceed seven years.

Financial Support

Ph.D. students entering the program with a B.A. may be supported (either by teaching assignments or fellowships) for five years. Students who have an M.A. and have been given transfer credit may be supported for four years. Such support depends upon the funds available, the number of students eligible, and the student's rate of progress.

Courses in Drama

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.

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.

65 Music Theatre Workshop I (2) F, W, S. For students new to singing or musical theatre. Basic vocal technique, characterization, and physicalization of music and lyrics introduced. May be taken for credit three times.

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. **(VII-B)**

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). Advanced acting in specialized areas including acting for the camera: film, situation comedy, commercials; auditioning and industry preparation; Shakespeare; Moliere; Chekov; improvisation; movement for the actor; self-starting; stage combat; repertory acting, singing; comedy; clowning; and masks. Prerequisites: Drama 130A-B. May be repeated for credit.

140 Contemporary American Theatre (4). A close examination of works and trends in the American theatre since World War II, including current playwriting as represented by new plays produced in Los Angeles, New York, Chicago, and other major repertory theatre centers.

141 Contemporary British Theatre (4). A close examination of British theatre in the post-Suez (1956-on) period, with special attention to political trends in current British playwriting.

142 Contemporary Continental Drama (4). A close examination of continental European dramatic literature and theory. Readings from Camus, Sartre, Beckett, Ionesco, Genet, Mrozek, Handke, Brecht, and others.

146 New York Music Theatre Workshop (4) W, S. Specifically for students accepted into the New York Satellite Program. Admission by audition. May be taken for credit six times. Formerly Drama 165N.

147 Music Theatre Dance (4) W, S. An exploration of various dance styles from different eras of the musical theatre stage. Prerequisite: Drama 65 or 165. May be taken for credit four times.

148A, B History of American Musical Theatre (4, 4) F, W. Discusses the composers, librettists, directors, choreographers, and performers in the American musical theatre. **148A:** 1700s–1940s: ballad opera, minstrels, vaudeville, burlesque, operetta, revues, and musical comedy. **148B:** 1940s–present: book musicals, concept musicals, Broadway opera, and new forms. Concurrent with Drama 248A, B.

149 Music Proficiency for Actors (0) F, W, S. Tutorial in basic keyboard and sight reading skills. Students repeat course until they can teach themselves a vocal line from a piano/vocal score. Pass/Not Pass only. Open only to students in the Honors in Music Theatre Program. Formerly Drama 166M.

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 trouping. 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.

165 Music Theatre Workshop II (4). A workshop in audition technique and song interpretation. Admission by audition only. May be taken for credit six times.

166A, B, C Music Theatre Workshop III (4, 4, 4) F, W. Scene study and song repertoire examined by era for the advanced music theatre student. **166A:** 1900s–1930s: operetta, revue, and musical comedy. **166B:** 1940s–1960s: book musicals. **166C:** 1970s–present: new forms and Broadway opera. Prerequisites: Drama 165 and audition. May be taken for credit six times.

167A, 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.

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).

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). Completion of a full-length play or its equivalent and production of a staged reading of the play at the end of the spring quarter. Discussion of relevant literary texts and student writings.

219 Graduate Master Class (1 to 4) F, W, S. Various topics such as Shakespeare, comedy, Molière, improvisation, Kabuki, television acting.

220 Seminar in Dramatic Literature (4) F, W, S

221 Seminar in Criticism (4)

222 Seminar in Theatre History (4)

223 Seminar in Performance Theory (4). A study of major performance theories since Diderot's *Paradox of Acting*.

225 Seminar on Theatre Pedagogy (4) F, W, S. A seminar on the major teaching systems in the dramatic arts with particular attention to professional arts training. Graduate students in Drama only; required prior to applying for Teaching Assistantships in studio areas.

230 Seminar in Contemporary Theatre (4)

235 Script Analysis and Research (4) F. Analysis of dramatic scripts. Examination of dramaturgic structure, character intentions and interactions, historical and literary milieu, and potentials for theatrical realization.

240 Graduate Projects (1 to 4) F, W, S, Summer. Various projects depending on student's concentration (acting, design, musical theatre, directing).

245 Conceptualization and Collaboration (4) F. 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 American Musical Theatre (4, 4) F, W. Discusses the composers, librettists, directors, choreographers, and performers in the American musical theatre. **248A:** 1700s–1940s: ballad opera, minstrels, vaudeville, burlesque, operetta, revues, and musical comedy. **248B:** 1940s–present: book musicals, concept musicals, Broadway opera, and new forms. Concurrent with Drama 148A, B.

250 Directed Reading (4)

255 Graduate Design and Stage Management (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 Stage Management emphasis. May be repeated for credit as topic varies.

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.

290 Dramatic Literature and Theatre History Prior to 1900 (4) F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

291 Dramatic Literature and Theatre History, 1900 to Present (4) F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

292 Cultural and Critical Theory (4). F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

293 Directed Studies (4 to 12). F, W, S. Prerequisite: consent of instructor.

294 Dissertation Research (4) F, W, S. Prerequisite: consent of instructor. In-progress grading for the first two quarters; Satisfactory/Unsatisfactory grading for the third quarter. May be taken for a total of 12 units.

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; (949) 824-6615
Rae Linda Brown, **Department Chair**

Faculty

Kei Akagi, B.A. International Christian University, Tokyo, *Lecturer in Music* (piano, jazz studies)
Douglas Basye, M.M. Carnegie Mellon University, *Lecturer in Music* (bass)
Haroutune Bedelian, Associate of the Royal Academy of Music, London, *Associate Professor of Music* (violin)
Rae Linda Brown, Ph.D. Yale University, *Department Chair and Associate Professor of Music, and Robert and Marjorie Rawlins Chair in Music* (history, American musics)
Ellie Choate, M.A. California State University, Long Beach, *Lecturer in Music* (harp)
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)
Christina Dahlin, M.F.A. University of California, Irvine, *Lecturer in Music* (voice, diction)
Arthur Davis, Ph.D. New York University, *Lecturer in Music* (bass, jazz studies)
Jonathan Davis, M.M. The Juilliard 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)
Christopher Dobrian, Ph.D. University of California, San Diego, *Assistant Professor of Music and of Information and Computer Science* (electronic music, composition)
Nina Gilbert, D.M.A. Stanford University, *Lecturer in Music* (conducting, choral ensembles)
Bernard Gilmore, D.M.A. Stanford University, *Professor of Music* (composition, theory)
Patrick Goeser, M.A. University of Iowa, *Lecturer in Music* (voice)
Frederick Greene, M.Mus. Ed. University of Southern California, *Lecturer in Music* (tuba)
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, vocal pedagogy)
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 Internationale in France, *Lecturer in Music* (flute)
Andrew Klein, B.F.A. California Institute of the Arts, *Lecturer in Music* (bassoon)
Alfred Lang, M.F.A. University of California, Irvine, *Assistant Professor of Music and Director of the Wind Ensemble* (trumpet, rock music)
Margaret Murata, Ph.D. University of Chicago, *Professor of Music* (history, analysis, criticism)
James Newton, B.M. California State University, Los Angeles, *Professor of Music and Director of the Charles Mingus Jazz Ensemble* (flute, jazz studies, composition)
Peter S. Odegard, Ph.D. University of California, Berkeley, *Professor Emeritus of Music* (theory, composition)
Charles M. Owens, B.M. California State University, Los Angeles, *Lecturer in Music and Director of the Jazz Big Band* (saxophone and jazz studies)
Margaret Parkins, D.M.A. State University of New York at Stony Brook, *Lecturer in Music* (cello)
Mahlon Schanzenbach, M.A. California State University, Long Beach, *Lecturer in Drama and Music* (voice)
John Schneiderman, B.Mus. University of California, Irvine, *Lecturer in Music* (guitar, lute)
Nina Scolnik, B.Mus. Oberlin Conservatory, Performance Diploma, The Juilliard School, *Lecturer in Music* (piano)
H. Colin Slim, Ph.D. Harvard University, *Professor Emeritus of Music* (history)
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, composition, contrabass, flute, French horn, harp, jazz instrumental, lute and guitar, oboe, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, or 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 weekly private instruction, for a maximum of 12 quarters for entering freshmen or six quarters for transfers and composition students, 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 analysis, history, or jazz), 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 interest: a historical project, a composition, or a lecture/performance.

Music scholarships are offered to promising undergraduate performers. Scholarship awards are 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 pursues.

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 Accompanying, Choral Conducting, Composition and Technology, Guitar/Lute Performance, Instrumental Performance, Jazz Composition, Jazz Instrumental Performance, Piano Performance, and Vocal Performance.

PERFORMANCE OPPORTUNITIES

Choral/Vocal

Choral ensembles at UCI offer all students, regardless of major, the opportunity to sing. Regular ensembles include the California Chamber Singers, Concert Choir, Madrigal Singers, Men's Chorus, Women's Chorus, and Women's Chamber Choir. Performances range from international concert tours, to Southern California concert venues, to campus concerts. The Department produces the annual Madrigal Dinner celebrating the court of Henry VIII. Annual invitational choral festivals are an integral part of the program. Opera and oratorio performances feature student soloists.

Instrumental

The UCI Symphony Orchestra offers participants an opportunity to explore the great masterworks of the standard orchestra repertory. The most proficient students have an opportunity to perform a concerto with the orchestra by winning the annual concerto competition. The symphony performs six times a year including collaborations with the UCI Opera Theatre and the Departments of Dance and Drama. Productions have included Bizet's *Carmen* and Humperdinck's *Hansel and Gretel*.

A cornerstone of instrumental study at UCI is the chamber music program. Small ensembles, coached by the faculty, have frequent opportunities to perform.

Additional student performance opportunities are available with four conducted ensembles: the Wind Ensemble performs great works from the concert band literature; the Jazz Big Band performs a variety of jazz big band repertoire; the Charles Mingus Jazz Ensemble performs improvised ragtime to the most current avante-garde jazz; and the UCI Band plays at athletic events, including home basketball season games.

Composition

Students have the opportunity to compose works for performances by undergraduates and graduates, chamber groups, and a student modern music chamber ensemble. Selected student works may be read by the large performing ensembles.

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. They should know scales, fundamental notation, triads, and 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 placement tests will determine the minimum number of quarters necessary to complete degree requirements. All transfer students 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 tests 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:

Composition students—instrumental or vocal performance proficiency as listed below for the appropriate instrument; submission of original instrumental and/or electronic compositions (scores and/or tapes) demonstrating creative talent and writing ability.

Guitar and lute students—knowledge of basic chord shapes, ability to read basic chord progressions and staff notation or tablature. 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.

Jazz instrumental students—ability to produce a focused, clear tone and precise intonation on their instrument. Students must perform from memory at least three blues compositions and three compositions (32 bar or other) chosen from Ellington, Parker, Coltrane, Mingus, Monk, or Wayne Shorter. Students also must perform by memory the major, minor, blues, and altered scales in all keys.

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.

Piano students—ability to perform from memory a prelude and fugue from Bach's *Well-Tempered Clavier,* the first movement of a classical sonata of the difficulty of a Beethoven sonata, excluding op. 49 nos. 1 and 2 and op. 79, and a composition from the romantic period or twentieth century.

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, Dvôrák, Haydn, Boccherini); **Double Bass:** major and minor scales and arpeggios, a solo from Saint-Saëns' *Carnival of the Animals* or comparable work, two contrasting movements from any concerto of the standard repertory.

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.

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.

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.

Course Groups by Specialization

	Composition
Private Lesson	Music 157
Ensembles	Music 160, 161, 162, 171, 174, 176, 178
	Guitar/Lute
Private Lesson	Music 170
Solo Performance Class	Music 174
Ensemble	Music 176
	Jazz
Private Lesson	Music 165, 167, 169
Solo Performance Class	Music 176
Ensemble	Music 160, 161, 178, or 182
	Percussion
Private Lesson	Music 169
Solo Performance Class	Music 176
Ensemble	Music 160, 161, or 178
	Piano
Private Lesson	Music 165
Solo Performance Class	Music 175
Ensemble	Music 176
	String
Private Lesson	Music 166
Solo Performance Class	Music 176 or 194
Ensemble	Music 160
	Voice
Private Lesson	Music 168
Solo Performance Class	Music 63, 163
Ensemble	Music 162
	Woodwind/Brass
Private Lesson	Music 167
Solo Performance Class	Music 176
Ensemble	Music 160, 161, or 178

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: None.

Departmental Requirements—Core

Four quarters of theory/musicianship (Music 16A-B-C-D); two quarters of courses chosen from post-tonal theory (Music 35A-B), jazz theory (Music 36A-B), counterpoint (Music 43) or advanced counterpoint (Music 135), instrumentation (Music 136), composition (Music 150), music technology (Music 51, 151, or 152); one year of music history (Music 40B-C-D); attainment of a passing score on the Piano Sight-Reading Examination, to be taken no later than the first quarter of the junior year.

NOTE: Composition students may not use Music 136, 150, and 151 to satisfy core requirements.

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 140–147 series or Music 155B; two years of instrumental or vocal instruction (12 units maximum, selected from Music 165–170); two years of ensemble or repertory classes as assigned by the Department selected from Music 63, 160–164, 171–176, 178, 194, or 197. Lesson must be taken concurrently with ensemble or repertory class. 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.

Students may choose to emphasize Analysis, History, Performance, and Jazz. One of the following senior projects must be completed: (1) a lecture or lecture/performance (including jazz) 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 composition or group of compositions of appropriate length; or (3) a thesis of at least 15 typed, double-spaced pages on a musical subject, 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
Freshman		
Music 16A	Music 16B	Music 16C
Lessons	Lessons	Lessons
Ensemble	Ensemble	Ensemble
Lower-division writing	Lower-division writing	Lower-division writing
Sophomore		
Music 16D	Music elective[1]	Music elective[1]
Lessons	Lessons	Lessons
Ensemble	Ensemble	Ensemble
Breadth II	Breadth II	Breadth II
Breadth VI	Breadth VI	Breadth VI
Junior[2]		
Music 40B	Music 40C	Music 40D
Breadth III	Breadth III	Upper-division writing
Breadth VI	Breadth V	Breadth V
Breadth V	Elective	Elective
Senior		
Music 155A	Music 140-147, or 155B	Music 192P
Breadth VII	Breadth VII	Breadth III
Elective	Elective	Elective
Elective	Elective	Elective
		Elective

[1] Selected from the following: Music 35A-B, 36A-B, 43, 51, 135, 136, 150, 151, or 152.

[2] Piano sight-reading examination should be taken no later than the first quarter of junior year.

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 140–147 series or Music 155B; instrumental or vocal students receive instruction each quarter of residence (Music 165–170) for a maximum of 12 quarters for entering freshmen and six quarters for transfer students. Composition students receive instruction for six quarters (Music 157) normally in their junior and senior years. Instruction beyond the maximum must be approved by the department; senior recital (Music 192S); completion of the following courses according to the approved Bachelor of Music specialization:

Composition: six quarters of ensemble performance selected from orchestra (Music 160), wind ensemble (Music 161), chorus (Music 162 or 171), chamber ensembles (Music 174 or 176), jazz big band (Music 178), or Charles Mingus jazz ensemble (Music 182); one quarter instrumentation (Music 136); two quarters of music technology (Music 51 and 151); three quarters of composition (Music 150). A senior project (Music 192P) may be substituted for the recital (Music 192S).

Guitar and Lute: guitar and lute workshop (Music 174) and chamber ensembles (Music 176) each quarter of residence.

Jazz Instrumental: jazz big band (Music 178), Charles Mingus jazz ensemble (Music 182), orchestra (Music 160), wind ensemble (Music 161) as assigned by the Department, and chamber ensembles (Music 176) each quarter of residence.

Orchestral or Band instruments: orchestra, wind ensemble, or jazz big band, as assigned by the Department (Music 160, 161, or 178) and chamber ensembles (Music 176) each quarter of residence.

Piano: piano repertory (Music 175 each quarter of residence); nine quarters of chamber ensembles (Music 176) or accompanying (Music 162P, 164P, 166P, or 197) as assigned by the Department. Transfer students must complete six quarters of chamber ensembles or accompanying in residence.

Voice: chorus (Music 162) each quarter of residence, and a minimum of six quarters of vocal performance (three quarters of Music 63 and three quarters of Music 163) for entering freshmen and a minimum of three quarters (Music 163) for transfer students. Three quarters of diction (Music 158) and two quarters of song literature (Music 156) are required for upper-division students. Vocal coaching (Music 168L) is also recommended for senior-level students, with approval from the Department, for three quarters, and must be taken concurrently with Music 163. During the quarter of their senior recital, students, with written permission of the Music faculty, may be exempted from a portion of their ensemble requirement.

NOTE: "Each quarter of residence" refers to residence within the major and residence at UCI.

Sample Program — B.Mus.

FALL	WINTER	SPRING
Freshman		
Music 16A	Music 16B	Music 16C
Major group[1]	Major group[1]	Major group[1]
Lower-division writing	Lower-division writing	Lower-division writing
Sophomore		
Music 16D	Music elective[2]	Music elective[2]
Major group[1]	Major group[1]	Major group[1]
Breadth II	Breadth II	Breadth II
Breadth VI	Breadth VI	Breadth VI
Junior[3]		
Music 40B	Music 40C	Music 40D
Major group[1]	Major group[1]	Major group[1]
Breadth VI	Breadth III	Upper-division writing
Breadth V	Breadth V	Breadth V
Senior		
Music 155A	Music 140-147, or 155B	Major group[1]
Major group[1]	Major group[1]	Music 192S
Breadth VII	Breadth VII	Breadth III
		Breadth III

[1] Three courses taken concurrently that are determined by the student's major. See Course Groups by Specialization chart.

[2] Selected from the following: Music 35A-B, 36A-B, 43, 51, 135, 136, 150, 151, or 152.

[3] Piano sight-reading examination should be taken no later than the first quarter of junior year.

Sample Program — B.Mus. in Composition

FALL	WINTER	SPRING
Freshman		
Music 16A	Music 16B	Music 16C
Ensemble[1]	Ensemble[1]	Ensemble[1]
Lower-division writing	Lower-division writing	Lower-division writing
Breadth II	Breadth II	Breadth II
Sophomore		
Music 16D	Music elective[2]	Music elective[2]
Music 150	Music 150	Music 150
Ensemble[1]	Ensemble[1]	Ensemble[1]
Breadth V	Breadth V	Breadth V
Junior[3]		
Music 40B	Music 40C	Music 40D
Music 51	Music 151	Music 136
Music 157	Music 157	Music 157
Breadth VI	Breadth VI	Upper-division writing
		Breadth VI
Senior		
Music 155A	Music 140-147, or 155B	Music 157
Music 157	Music 157	Music 192P or 192S
Breadth VI	Breadth III	Breadth III
Breadth VII	Breadth VII	Breadth III
		Elective

[1] Selected from the following: Music 160, 161, 162, 171, 174, 176, or 178.

[2] Selected from the following: Music 35A-B, 36A-B, 43, 51, 135, or 152.

[3] Piano sight-reading examination should be taken no later than the first quarter of junior year.

Sample Program — B.Mus. in Voice

FALL	WINTER	SPRING
Freshman		
Music 16A	Music 16B	Music 16C
Music 162	Music 162	Music 162
Music 168	Music 168	Music 168
Lower-division writing	Lower-division writing	Lower-division writing
Sophomore		
Music 16D	Music elective[1]	Music elective[1]
Music 63	Music 63	Music 63
Music 162	Music 162	Music 162
Music 168	Music 168	Music 168
Breadth II	Breadth II	Breadth II
Breadth VI	Breadth VI	Breadth VI
Junior[2]		
Music 40B	Music 40C	Music 40D
Music 156	Music 156	Upper-division writing
Music 158	Music 158	Music 158
Music 162	Music 162	Music 162
Music 168	Music 168	Music 168
Breadth VI	Breadth III	Breadth V
Breadth V	Breadth V	Breadth III
Senior		
Music 155A	Music 140–147, or 155B	Music 192S
Music 162	Music 162	Music 162
Music 163	Music 163	Music 163
Music 168	Music 168	Music 168
Music 168L	Music 168L	Music 168L
Breadth VII	Breadth VII	Breadth III

[1] Selected from the following: Music 35A-B, 36A-B, 43, 51, 135, 136, 150, 151, or 152.

[2] Piano sight-reading examination should be taken no later than the first quarter of junior year.

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 135, 140–147, 155A-B; senior recital (Music 196).

MASTER OF FINE ARTS PROGRAM

Degree Offered

M.F.A. in Music, with emphasis in Accompanying, Choral Conducting, Composition and Technology, Guitar/Lute Performance, Instrumental Performance, Jazz Composition, Jazz Instrumental Performance, Piano Performance, and Vocal Performance.

Admission

Applications for admission to the degree program 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 the equivalent of two years of study in a foreign language.

Applicants must also submit a substantial sample of their writing, preferably 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 programs 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). 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. All applicants who are admitted will be given a placement examination prior to the beginning of their studies.

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. Students in choral conducting, vocal performance, and keyboard performance must demonstrate reading knowledge of French, German, Italian, Spanish, or Latin 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. Students who are required to fulfill this requirement must do so 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.

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. Total units must include 52 units of graduate-level courses, and 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:

Accompanying: Bibliography (Music 200); two courses in analysis (Music 201A-B); six courses in instrumental literature (Music 211); one seminar (Music 220, 230, or 235); two graduate projects (Music 240); Directed Reading (Music 250); three courses of vocal or choral accompanying (Music 197, 162P, or 164) and two courses of instrumental or chamber accompanying (Music 166P or 176) as assigned by the Department; three courses of diction (Music 158) and two courses of song literature (Music 156). There will be a recital at the end of each of the two years of residence.

Choral Conducting: Bibliography (Music 200); two courses in analysis (Music 201A-B); one seminar (Music 220, 230, or 235); two studio tutorials (Music 190); five courses in choral literature (Music 210); Tutorial in Music (Music 191); Directed Reading (Music 250); two graduate projects (Music 240); 10 units of electives selected in consultation with head of student's program area; participation in performance (Music 162, 164, or 171) as assigned by the Department each quarter of residence of which only six units may be counted toward degree requirements; preparation of choral performance supported by a paper (circa 15-25 pages) in the second year of residence.

Composition and Technology: Bibliography (Music 200); two courses in analysis (Music 201A-B); six courses in composition (Music 212); two courses in music technology (Music 215); two seminars (Music 220 or 230); Critical Studies in Music (Music 235); 10 units of electives selected from Music 136, 145-147, 190, 191, 201A, 215, 220, 240, and 250; participation in a large ensemble or chamber group for three quarters selected from Music 160, 161, 162, 162P, 171, 176, 178, 182, 194, 197; preparation of a project in composition, including score and supporting written essay, in the second year of residence.

Guitar/Lute Performance: Bibliography (Music 200); two courses in analysis (Music 201A-B); one seminar (Music 220, 230, or 235); six courses in instrumental literature (Music 211); two graduate projects (Music 240); six quarters of chamber ensembles (Music 176 or 189) as assigned by instructors; 12 units of electives selected in consultation with head of student's program area. There will be a solo recital at the end of the second year of residence supported by a written essay submitted prior to the recital.

Instrumental Performance: Bibliography (Music 200); two courses in analysis (Music 201A-B); one seminar (Music 220, 230, or 235); six courses in instrumental literature (Music 211); six quarters of chamber ensembles (Music 176) as assigned by instructors; two graduate projects (Music 240); six units of electives selected in consultation with head of student's program area; participation in a large ensemble as assigned by the Department (Music 160, 161, or 178) each quarter of residence of which only six units may be counted toward degree requirements. There will be a solo recital at the end of the second year of residence supported by a written essay submitted prior to the recital.

Jazz Composition: Bibliography (Music 200); Analysis (Music 201B); six courses in composition (Music 212); two courses in music technology (Music 215); two seminars (Music 220 or 230); Critical Studies in Music (Music 235); two graduate projects (Music 240); six units of electives selected from Music 136, 145-147, 160, 161, 190, 191, 194, 201A, 215, 220, 240, and 250; participation in a large ensemble or chamber group for three quarters selected from Music 160, 161, 176, 178, and 194; preparation of a project in composition, including score and supporting written essay, in the second year of residence.

Jazz Instrumental Performance: Bibliography (Music 200); Analysis (Music 201B); six courses in instrumental literature (Music 211); one course in music technology (Music 215); two seminars (Music 220 or 230); Critical Studies in Music (Music 235); two graduate projects (Music 240); 10 units of electives selected from Music 136, 145-147, 160, 161, 190, 191, 194, 201A, 215, 220, 240, and 250; participation in a large ensemble or chamber group as assigned by the Department (Music 176, 178, or 182) each quarter of residence, of which only six units may be counted toward degree requirements; preparation of a project in performance supported by a written essay submitted prior to the recital in the second year of residence.

Piano Performance: Bibliography (Music 200); two courses in analysis (Music 201A-B); one seminar (Music 220, 230, or 235); six courses in instrumental literature (Music 211); two graduate projects (Music 240); six quarters of chamber ensembles (Music 176) as assigned by instructors each quarter of residence; 12 units of electives selected in consultation with head of student's program area. There will be a solo recital at the end of each of the two years of residence. Prior to the second-year recital, student must submit a supporting written essay of the performance material.

Vocal Performance: Bibliography (Music 200); two courses in analysis (Music 201A-B); one seminar (Music 220, 230, or 235); Studio Tutorial (Music 190); Vocal Pedagogy (Music 159); four quarters of vocal performance (Music 163) with concurrent enrollment in vocal coaching (Music 168L); six courses in vocal literature (Music 210); two graduate projects (Music 240); Directed Reading (Music 250); one elective selected in consultation with head of student's program area; participation in performance as assigned by the Department (Music 162, 164, 190, or 240) each quarter of residence, of which only six units may be counted toward degree requirements; preparation of a performance supported by a written essay submitted prior to the recital in the second year of residence.

Courses in Music

LOWER-DIVISION

2 Percussion Laboratory (1). Introduction to percussion instruments and basic performing skills and notations. Prerequisites: restricted to Office of Teacher Education students pursuing a teaching credential; ability to read music.

3 Music Appreciation (4). Introductory learning-to-listen course. Students develop musical understanding through listening to live and recorded performances: identifying such elements as melody, meter, mode, pitch, rhythm, harmony, and timbre; applying those concepts to music from a wide range of historical and cultural origins.

6 Instrumental Laboratory (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) F, W, S. Learning about and performing American spirituals and gospel songs. Approach is one of cultural scholarship rather than "musically straight." Performances are given throughout the year. May be repeated for credit. Same as African American Studies 10.

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)**

16A-B-C-D Theory/Musicianship (6-6-6-6) F, W, S. 16A: Basic concepts and materials. Major and minor scales, intervals between pitches, key signatures, elements of rhythm, diatonic chords in root position, and inversion. Simple and compound meters. **16B:** Principles of voice-leading, harmonic

progression. Triads in first inversion. Triads in second inversion (6-4 chords). Syncopation in simple and compound meters. **16C:** Phrase structure, non-chord tones, the V7 chord and its resolutions, inversions of the V7 chord, ii7 and vii7, other diatonic seventh chords. Non-symmetrical meters and mixed meters. **16D:** Chromaticism and altered chords, secondary (applied) V and V7 chords, secondary vii7 chords, common—chord and common—tone modulations, other modulations, mode mixture, the Neapolitan chord, augmented-sixth chords, altered dominant chords, extended chords (ninth, eleventh, and thirteenth chords), harmonic practices of the late nineteenth century.

18 Basic Voice (2) Summer. Class instruction for nonmusic majors. Prerequisite: Music 25 or consent of instructor. May be repeated for credit.

25 Fundamentals of Music (2) Summer. Scales, key signatures, notation, basic progressions, intervals, reading, intonation, transposition, basic rhythms.

35A-B Post-Tonal Theory (4-4) W, S. Study of significant harmonic, rhythmic, and structural practices since 1900. Analysis and written work exploring free atonality and serialism; neo-tonal practices such as use of extended tertian harmonies, modalism, pandiatonicism, and non-tertian harmonies; structural principles such as aleatory, metric modulation and minimalism. Prerequisite: Music 16D.

36A-B Jazz Theory (4-4) W, S. 36A: Introduction to the jazz symbols and terminology. Study of the most basic harmonic and melodic devices used by the jazz improviser. Emphasis is placed on understanding harmonization. Prerequisite: Music 16D. **36B:** Continuation of the study of harmonic and melodic devices in jazz with emphasis on role that bi-tonality has in modern idiom. Use of non-chordal notes is examined as well as a look at reharmonization of pre-existing melodies. Prerequisite: Music 36A.

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 16C; Music 35B recommended for 40C. Open to Music majors only. **(IV, VII-B)**

40D Twentieth-Century Music (4) S. Survey of principal composers, movements, and compositional techniques of Western art music of the modern era. Prerequisites: Music 16D and 40B-C. **(IV, VII-B)**

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 Counterpoint (4) W. Studies in contrapuntal practices of various style periods such as the sixteenth, eighteenth, and twentieth centuries. Prerequisite: Music 16D.

51 Music Technology and Computers (4) F. A study of the influence of technology on the musical culture and aesthetics of America in the twentieth century, with particular emphasis on the role of the computer. Work includes lectures, readings, listenings, discussions, demonstrations, writing, and experimentation.

63 Vocal Performance (1) F, W, S. Performance class for lower-division students emphasizing the development of style and stage presentation of song literature. Repertoire chosen from material assigned in the voice studio. May be repeated for credit. Formerly Music 63A-B-C.

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. Prerequisite: Music 16C. Corequisite: Music 174, 175, or 176. Open only to Music majors, except students concentrating in voice. Pass/Not Pass only.

UPPER-DIVISION

135 Advanced Counterpoint (4) S. Advanced exercises and composition in two- and three-part tonal writing, canon, and fugue, as well as some contemporary forms. Prerequisite: Music 43. Formerly Music 135B.

136 Instrumentation (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. Prerequisite: Music 16C.

NOTE: Courses in the 140–147 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), Duke Ellington, Miles Davis, and Billie Holliday (146). Topics vary from quarter to quarter; each course may be repeated for credit. Some topics courses are open to 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). Prerequisites: satisfactory completion of the lower-division writing requirement and upper-division standing.

146 Studies in Jazz Music (4)

147 Studies in Music Technology (4) F, W, S. Specialized topics in electronic music, computer-aided music, and other aspects of music technology.

150 Composition (4) F, W, S. Exercises and projects for diverse instrumental-vocal combinations; contemporary techniques and problems. Participation in the improvisation ensemble and working with electronic media. Prerequisite: Music 16C or consent of instructor. May be repeated for credit. Formerly Music 150A-B-C.

151 Computer Music Composition (4) W. Exercises in the composition of music uniquely possible by computer, including digital signal processing, computer control of synthesizers and processors, and algorithmic composition. Demonstrations and musical analyses in class; considerable studio work outside class. Prerequisite: Music 51 or consent of instructor.

152 Interactive Arts Programming (4) S. Study of artistic issues and programming techniques involved in the development of interactive computer art and music. Theoretical background, basic tenets of programming, and practical exercises in programming interactive computer multimedia art. Prerequisite: Music 151 or Studio Art 106 or consent of instructor.

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 16D and 40B-C, or equivalent; satisfactory completion of the lower-division writing requirement.

156A-B Song Literature (2-2) F, W. A survey of song literature. Designed as an overview of the song repertoire. **156A:** German Lieder. **156B:** Songs of other European languages. Open only to upper-division Music majors.

157 Advanced Study in Composition (2) F, W, S. Individual weekly lessons in composition. Prerequisite: Music 150C. Open only to upper-division Music majors.

158A-B-C Diction (2-2-2) F, W, S. In-depth study of the International Phonetic Alphabet (IPA), including its transcription and pronunciation, and its application for singers. **158A:** Introduction to IPA and Italian diction. **158B:** French diction. **158C:** German diction. Open only to upper-division Music majors.

159 Vocal Pedagogy (2) S. Survey about the physical structure of the singing mechanism, science, and philosophy of studio instruction.

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. By audition only. 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 nonmajors only with consent of Department of Music and instructor. May be repeated for credit.

161 Wind Ensemble (2) F, W, S. An ensemble devoted to the study and performance of music written for varying combinations of wind and percussion instruments. Concerts typically include works for small groups (e.g., octets), as well as those for full symphonic wind ensemble. Membership open to both Music majors and nonmajors by audition only. May be repeated for credit.

162 University Chorus (2) F, W, S. Included in the University Chorus are Concert Choir, Madrigal Singers, Men's Chorus, Women's Chorus. Each quarter a major concert is prepared, often with orchestral accompaniment. Membership is open by audition. May be repeated for credit.

162L Basic Voice Lab (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. Prerequisite: consent of instructor. May be repeated for credit.

162S Summer Choir (2) Summer. Participants with all levels of experience (or inexperience) are encouraged to join this class. Each meeting is a rehearsal, where students learn basic choral singing techniques and apply those techniques to choral repertoire. Pass/Not Pass only. May be repeated for credit.

163 Vocal Performance (1) F, W, S. Performance class for upper-division students emphasizing the development of style and stage presentation of song literature. Repertoire chosen from material assigned in the voice studio. May be repeated for credit. Formerly Music 163A-B-C.

164 Opera Workshop (2) F, W, S. 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: Accompanying (2) F, W, S. Training in techniques and operatic repertory for keyboard players. Prerequisite: consent of instructor May be repeated for credit.

165 Advanced Study in Piano (2) F, W, S. 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 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, participation in the weekly string master class, performance in public recitals. Prerequisite: consent of instructor. May be taken for credit three times.

167 Advanced Study for Wind Instruments (2) F, W, S. Private weekly lessons. Open to Music majors 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, or 178 as assigned by the Department. Open to Music majors 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) F, W, S. A select ensemble specializing in vocal chamber music from all periods. Frequent performances on and off campus. Membership is open to all singers by audition. May be repeated for credit.

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. An informal master class for the discussion of solo repertory and performance practice, this workshop also includes special topics such as historical notational systems, traditional American guitar styles, and demonstrations of period plucked instruments.

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 (2) F, W, S. A class for instrumental majors. Instrumental students are assigned to various music ensembles, such as classical, jazz, contemporary, etc. 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 Big 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.

180 Music Criticism (4). Topics vary.

181A Beginning Jazz Improvisation (2) F. Develops the student's basic understanding of the fundamentals of jazz improvisation. Basic harmonic patterns, blues, modality, and simpler song forms are covered. This is a performance workshop requiring a reasonable amount of instrumental facility. Prerequisite: Music 16C or equivalent. Formerly Music 178I.

181B Intermediate Jazz Improvisation (2) W. Continuation of beginning jazz improvisation which covers various 32-bar song forms, modal improvisation and more sophisticated blues forms. Studies the development of improvisation through history of jazz including composers Ellington, Monk, Morton, Mingus, Coltrane, Silver, and others. Prerequisite: Music 181A.

181C Advanced Jazz Improvisation (2) S. Reviews the relationship between long-form composition and improvisation. The historical context of various improvisational styles and linear non-chordal improvisation are introduced. Prerequisite: Music 181B.

182 Charles Mingus Jazz Ensemble (2) F, W, S. Ensemble based on performance practices of Charles Mingus. Range of music covered encompasses the full traditional jazz from improvised ragtime up through the most current avant-garde musical techniques. Prerequisites: Music 181C or equivalent; consent of instructor.

189 Accompanying for Plucked Strings: Continuo and Changes (2) F, W, S. Students apply theory to their instruments as they learn the basics of pre-1800 continuo playing and post-1900 jazz charts. Includes discussions of appropriate repertory, treatment of harmonic progressions, and finer points of style and technique. Prerequisite: Music 16C. May be repeated for credit.

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. Corequisite: Music 163, 174, 175, or 176. Prerequisite: Music 16D. Open to Music majors only. Pass/Not Pass only.

192P Senior Project (0) F, W, S. Senior project for Music majors in the B.A. program. Open to Music majors only. Pass/Not Pass only.

192S Senior Recital (0) F, W, S. Performance of solo public recital with departmental approval. The recital must include at least one work composed since 1945. Corequisites: Music 163, 174, 175, or 176. Prerequisites: Music 16D, 40B-C-D or equivalent; and Music 155A. Pass/Not Pass only.

193 Conducting (4) S. Fundamentals of baton technique, score study, transposition, and orchestration. Prerequisites: Music 16D and 40B-C-D or equivalent. May be taken for credit twice.

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). The recital must include at least one work composed since 1945. For Special String Performance students only. Corequisite: Music 177. May be taken for credit two times.

197 Song Interpretation (2) F, W, S. Designed for advanced pianists to work with singers. Performance class on song. Variety of languages, countries, and styles. Prerequisite: consent of instructor. May be repeated for credit.

199 Independent Study (2) F, W, S. Research, writing, or composition work, under the guidance of a faculty member, 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 201A-B.

200 Bibliography and Research (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.

201A-B Analysis (4-4) F, W. Various approaches to analysis through concentrated study of a number of selected works. Formerly Music 201.

210 Vocal or Choral Literature (4) F, W, S. Intensive private instruction and study of the various vocal/choral literatures. May be taken for credit six times.

210R M.F.A. Vocal/Choral Recital (0) F, S. Performance of public recital. The recital must include at least one work composed since 1945. Satisfactory/Unsatisfactory only.

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, S. Performance of public recital. The recital must include at least one work composed since 1945. Satisfactory/Unsatisfactory only. May be taken for credit two times.

212 Graduate Studio: Composition (4) F, W, S. Intensive work in composition geared to each student's level of competence. May be repeated for credit.

215 Graduate Tutorial: Music Technology (4) F, W, S. Studies in the history, literature, composition, and performance of electronic and computer music, including instruction in the theory and usage of prevalent music technology.

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.

235 Critical Studies in Music (4) F, W, S. A critical examination of Western music traditions, institutions, and aesthetics, employing new scholarship in music and new critical studies in other disciplines.

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.

250 Directed Reading (4). Individual research projects, resulting in the writing of a substantial paper pertaining to the principal area of concentration. May be repeated for credit.

399 University Teaching (1 to 4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF STUDIO ART

176 Sculpture Studio; (949) 824-6648
David Trend, **Department Chair**

Faculty

Ed Bereal, Chouinard Art Institute, *Senior Lecturer Emeritus in Studio Art*
Tony DeLap, Claremont Graduate School, *Professor Emeritus of Studio Art*
Ulysses Jenkins, Jr., M.F.A. Otis Parsons Art Institute, *Associate Professor of Studio Art* (video)
Craig Kauffman, M.F.A. University of California, Los Angeles, *Professor Emeritus of Studio Art*
Antoinette LaFarge, M.F.A. School of Visual Arts, *Assistant Professor of Studio Art* (digital media)
Betty Lee, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (photography)
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, *Associate Professor of Studio Art* (public art, sculpture, installation, performance)
Yong Soon Min, M.F.A. University of California, Berkeley, *Associate Professor of Studio Art* (sculpture)
Gifford C. Myers, M.F.A. University of California, Irvine, *Professor of Studio Art* (ceramic sculpture)
Robert Nideffer, Ph.D. University of California, Santa Barbara, *Assistant Professor of Studio Art and of Information and Computer Science* (electronic intermedia, interface theory and design, technology and culture, contemporary social theory)
Connie Samaras, M.F.A. Eastern Michigan University, *Associate Professor of Studio Art* (photography, media theory, contemporary art issues)
David Trend, Ph.D. School of Education, Miami University, *Department Chair and Associate Professor of Studio Art* (video, photography, visual studies, curriculum)
Anne Walsh, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (visual fundamentals, studio methods)
Pat Ward-Williams, M.F.A. Maryland Institute College of Art, *Associate Professor of Studio Art* (photography, installation)

Visiting Lecturers

Andrea Bowers, M.F.A. Bowling Green State University, *Lecturer in Studio Art* (painting, drawing)
Steven Criqui, B.A. University of California, San Diego, *Lecturer in Studio Art* (painting, art history, criticism)
Allan deSouza, M.F.A. University of California, Los Angeles, *Lecturer in Studio Art* (visual fundamentals, photography)
Mara Lonner, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (drawing, sculpture)
Deborah Oliver, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (performance)
Catherine Opie, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (photography)
William "Shelby" Roberts, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (photography)
Larry Wasserman, M.A. University of California, Los Angeles, *Lecturer in Studio Art* (ceramics)
Paul Zelevanksy, M.A. Columbia University, *Lecturer in Studio Art* (visual fundamentals)

The Department of Studio Art takes a wide-ranging, interdisciplinary view of contemporary art practice. The Department emphasizes a demanding, conceptual approach to work in process in addition to traditional notions of product. Students are encouraged to develop an individual, disciplined direction through an experimental approach to media, materials, and techniques. To further this end, the curriculum provides studio experiences in drawing, painting, sculpture, ceramics, photography, digital imaging, and video, in addition to emphasizing cultural studies in relation to contemporary practice. Visiting artists and theorists who teach on a quarterly basis, or who make shorter guest appearances, are an integral part of the program.

The University's Education Abroad Program offers students the opportunity to study abroad. Special programs for Studio Art majors are offered in Venice (for graduate-level study also).

CAREERS FOR THE STUDIO ART MAJOR

Departmental faculty and the range of artists whose work is represented in the University Art Gallery exhibitions provide diverse career models. Some graduates go on to careers as exhibiting artists or teachers; others work in arts-related activities in museums, galleries, and artists' organizations. A bachelor's degree in Studio Art is usually required as preparation for graduate-level study in studio art.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

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, B, C or 42A, B, C; five lower-division courses selected from 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	Elective
	English and Comp. Lit. WR39B	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 University Art Gallery.

The program of visiting artists and lecturers is an integral part of the graduate experience. Recent visitors have included Shani Mootoo, Doug Sadownick, Terry Wolverton, PWA/UV, Lutz Bacher, Laura Owens, Steve Fagin, Dinh Le, Ela Troyano, Laura Cottingham, Bruce Yonemoto, Carlos Estrada-Vega, Todd Gray, Eric Nakamura, Martin Wong, Glenn Kaino, Sam Durant, Jess Dobkin, Rea Tajiri, and Carolee Schneemann.

Individual studio space is assigned by lottery. Facilities support sculpture in wood and metal, photography, video, digital media, ceramics, painting, drawing, and performance.

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 January 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 five 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 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. **(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. **(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.

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.

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. Materials fee.

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.

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.

65 Basic Digital Imaging: Photography (4). An introduction to basic techniques for producing digital images. The development of skills to create and manipulate still images using paint and photographic-based programs is emphasized. Materials fee.

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.

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). Exploration of objects, gesture, action, text, image, and media to create narrative or non-narrative works. Elements of theory and history of performance art are discussed to illustrate techniques and styles. The goal is to understand, identify, and articulate your artistic vision and voice. May be taken for credit twice.

UPPER-DIVISION

100 Special Topics in Studio Art (4). Prerequisites: Studio Art 10A, B, C; upper-division standing or consent of instructor. 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.

102 Intermediate Drawing (4). Continuation of the investigation initiated in Studio Art 20, with an emphasis on experimentation, personal investigation, and the development of conceptual working premises, as well as the acquisition of necessary skills. Group discussion and critique are emphasized. Prerequisites: Studio Art 1A-B-C and 20 or consent of instructor. May be taken for credit twice.

103 Intermediate Painting (4). Continuation of the investigation initiated in basic painting, with an emphasis on experimentation, personal investigation, development of conceptual working premises, as well as the acquisition of necessary skills. Group discussion and critique are emphasized. Prerequisites: Studio Art 1A-B-C and 30 or consent of instructor. May be taken for credit twice.

104 Intermediate Sculpture (4). Investigation of three-dimensional space, including the construction of objects and the manipulation of the environment. Students define personal projects and translate personal, social, and political experience into visual meaning. Range of artists' works introduced. Group discussion and critiques. Materials fee. Prerequisites: Studio Art 1A-B-C and 40 or consent of instructor. May be taken for credit twice.

105 Intermediate Ceramic Sculpture (4). Further investigation of the use of clay as a medium, with emphasis on experimental practice and the relationship to contemporary visual art. Emphasizes discussion of ideas, and provides information on clay body, fabrication, glazing, and firing. Materials fee. Prerequisites: Studio Art 1A-B-C and 51 or consent of instructor. May be taken for credit twice.

106 Interactive Digital Media: Sound and Video (4). Students learn how to prepare and present multimedia materials within interactive formats. Programs for digitizing and altering sound and video are introduced. Various strategies for editing and arranging materials within temporal parameters are discussed. Prerequisites: Studio Art 1A-B-C and 65 or consent of instructor. May be taken for credit twice.

107 Intermediate Photography (4). An in-depth continuation of the critical and technical skills explored in Studio Art 71. Experimentation, photographic interests and vocabulary, critical abilities and development of independent projects. Slide lectures, readings, technical demonstrations, criticism, and social histories of photography. Prerequisites: Studio Art 1A-B-C and 71 or consent of instructor. May be taken for credit twice.

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 and 81 or consent of instructor. May be taken for credit twice.

109 Intermediate Performance Art (4). Continued investigation of the concepts and history of experimental performance art, including its relation to contemporary artistic practice. Continues to refine technical skills, as well as space, audiences, and cultural connections. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice.

110 Interdisciplinary Digital Arts (4) F, W, S. Covers a range of interdisciplinary approaches for utilizing computer systems. Investigates such topics as World Wide Web design and authoring, digital mail art, computer installations, and performance within video conferencing contexts. Prerequisites: Studio Art 1A-B-C and 65 or consent of instructor. May be taken for credit twice.

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.

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.

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: Studio 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: Studio 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.

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.

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.

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.

149 Multimedia and the Arts in the Multicultural Classroom (4) F, W, S. Multiculturalism and underrepresented U.S. minorities and the visual and performing arts: perspectives in artistic perception, creative expression, historical and cultural context, and aesthetic valuing, and media literacy in the interpretation and production of multimedia arts products and applications for K–12 classrooms. Same as Education 104E. **(VII-A)**

150 Advanced Studio Topics/Painting (4). Provides an intensive and specialized working environment. Thematic issues and material strategies explored. Prerequisites: Studio Art 30 and 103 or consent of instructor. May be repeated for credit as topics vary.

150C Advanced Drawing (4). Advanced studio problems for visual exploration. Students pursue individual solutions to self-defined and presubscribed projects. Techniques/materials are individual choice. Continual analysis of the personal process. Prerequisites: Studio Art 20, 102. May be repeated for credit with consent of instructor.

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.

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.

153 Advanced Studio Topics/Video (4). The class will be directed to the production of individual or collaborative videotapes, using studio, portable camera, and editing facilities and sound and computer elements. Emphasis will be on individually initiated projects. Readings and screenings are assigned. Materials fee. Prerequisites: Studio Art 108 or consent of instructor. May be repeated for credit as topics vary.

154 Advanced Studio Topics/Performance (4). An intensive investigation of the practice of performance art, with an emphasis on th development of individual projects, and the refinement of various technical skills, as well as audiences, spaces, and cultural connections. Prerequisites: Studio Art 10A, B, C, 109, and consent of instructor. May be repeated for credit as topics vary.

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.

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.

157 Color Photography (4). Introduction to color photographic theory, process, and practice. Also serves as an introduction to critical and historical issues specific to color photography as contemporary art practice. Slide lectures, readings, technical demonstrations, and critiques. Prerequisites: Studio Art 71 and 107 or consent of instructor. May be taken for credit twice.

160 Advanced Color Photography (4). For advanced photography students who wish to perfect their skills in traditional color photography methods. An accelerated course geared toward refining critical abilities and developing individual photographic vision through directed projects. Emphasis on color photography as a contemporary art practice. Prerequisites: Studio Art 1A-B-C and 157, or consent of instructor.

166 Advanced Collaborative Projects (4). Organized around the design and completion of a group project such as authoring a CD-ROM or engineering a complex collaborative performance or curating a Web-based exhibition site. *Prerequisites: Studio Art 1A-B-C and 65 or consent of instructor. May be* taken for credit twice.

175 Digital Art Aesthetics (4). Focuses on current theoretical and political research related to digital imaging, including ethical implications of artificial life, significance of identity politics, gender/race in cyberspace, access to computing systems, issues of post-structuralist aesthetics. Showing of contemporary artists in this field. Prerequisites: Studio Art 1A-B-C and 65 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.

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.

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.

235 Graduate Seminar: Digital Imaging (4) F, W, S. Introduction to digital imaging methods and concepts. Emphasis is placed on extensions and translations of the students' previous work in other media into appropriate computer applications. May be taken for credit twice.

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

Susan V. Bryant, **Dean**

101 Biological Sciences Administration
Undergraduate Counseling: (949) 824-5318
Graduate Programs:
Department of Ecology and Evolutionary Biology: (949) 824-4743
Combined Graduate Program in Molecular Biology, Genetics, and Biochemistry: (949) 824-8145
Department of Neurobiology and Behavior: (949) 824-8519
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 Biophysics and of Biological Sciences*

Joseph Arditti, Ph.D. University of Southern California, *Professor of Biological Sciences*

Stuart M. Arfin, Ph.D. Albert Einstein College of Medicine, *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*

Pierre Baldi, Ph.D. California Institute of Technology, *Associate Professor of Information and Computer Science and of Biological Chemistry*

Kenneth M. Baldwin, Ph.D. University of Iowa, *Professor of Physiology and Biophysics, Developmental and Cellular Biology, Community and Environmental Medicine, and 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 (Dee Dee) Shepard Chair in Neurological Studies*

Alan G. Barbour, M.D. Tufts University School of Medicine, *Professor of Microbiology and Molecular Genetics and of Medicine (Infectious Diseases)*

Lee Bardwell, Ph.D. Stanford University, *Assistant Professor of Biological Sciences*

Michael E. Barish, Ph.D. Stanford University, *Associate Adjunct Professor of Physiology and Biophysics and of Biological Sciences*

Albert F. Bennett, Ph.D. University of Michigan, *Chair of the Department of Ecology and Evolutionary Biology and 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, Electrical and Computer Engineering, Ophthalmology, Radiology, and Management, and Arnold and Mabel Beckman Chair in Laser Biomedicine*

James D. Bever, Ph.D. Duke University, *Assistant Professor of Biological Sciences*

Xiaoning Bi, M.D. Binzhou Medical College (People's Republic of China), M.D. Brain Research Institute, Zurich University (Switzerland), Ph.D. University of Southern California, *Assistant Adjunct Professor of Anatomy and Neurobiology*

Robert H. Blanks, Ph.D. University of California, Los Angeles, *Professor of Anatomy and Neurobiology, Otolaryngology, and Biological Sciences*

Bruce Blumburg, Ph.D. University of California, Los Angeles, *Assistant Professor of Biological Sciences*

Hans R. Bode, Ph.D. Yale University, *Associate Director of the Developmental Biology Center and Professor of Biological Sciences*

Peter A. Bowler, Ph.D. University of California, Irvine, *Director of the UCI Arboretum, UC Natural Reserve System Academic Coordinator, and Associate Adjunct Professor of Ecology and Evolutionary Biology and of Environmental Analysis and Design,*

Timothy J. Bradley, Ph.D. University of British Columbia, *Professor of Biological Sciences*

Ralph A. Bradshaw, Ph.D. Duke University, *Professor of Physiology and Biophysics, Anatomy and Neurobiology, and Biological Sciences*

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, *Dean of the School of Biological Sciences and Professor of Biological Sciences*

Barbara K. Burgess, Ph.D. Purdue University, *Professor of Molecular Biology and Biochemistry and of Biological Sciences*

Nancy Burley, Ph.D. University of Texas, Austin, *Professor of Biological Sciences*

William Byerley, M.D. University of Texas, *Clinical Professor of Psychiatry and Human Behavior and of Biological Chemistry*

Michael D. Cahalan, Ph.D. University of Washington, *Professor of Physiology and Biophysics and of Biological Sciences*

Lawrence F. Cahill, Ph.D. University of California, Irvine, *Assistant Professor of Neurobiology and Behavior*

Vincent J. Caiozzo, Ph.D. University of California, Irvine, *Associate Adjunct Professor of Orthopaedic Surgery and of Physiology and Biophysics*

Anne L. Calof, Ph.D. University of California, San Francisco, *Associate Professor of Anatomy and Neurobiology and of Developmental and Cell Biology*

Diane R. Campbell, Ph.D. Duke University, *Professor of Biological Sciences*

Richard D. Campbell, Ph.D. The Rockefeller Institute, *Professor of Biological Sciences*

Thomas J. Carew, Ph.D. University of California, Riverside, *Chair of the Department of Neurobiology and Behavior, Professor of Neurobiology and Behavior, and Bren Chair*

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 Genetics, and Biological Sciences*

Ken W.-Y. Cho, Ph.D. University of Pennsylvania, *Professor of Biological Sciences*

Olivier Civelli, Ph.D. Swiss Institute of Technology, *Professor of Pharmacology and of Developmental and Cell Biology, and Eric L. and Lila D. Nelson Chair in Neuropharmacology*

Carl Cotman, Ph.D. Indiana University, *Professor of Neurology, Psychiatry and Human Behavior, and Neurobiology and Behavior*

Michael G. Cumsky, Ph.D. University of California, Berkeley, *Associate Professor of Biological Sciences and of Molecular Biology and Biochemistry*

Dennis D. Cunningham, Ph.D. University of Chicago, *Senior Associate Dean for Academic Affairs, College of Medicine, and Professor of Microbiology and Molecular Genetics and of Biological Sciences*

Xing Dai, Ph.D. University of Chicago, *Assistant Professor of Biological Chemistry*

Rowland H. Davis, Ph.D. Harvard University, *Professor of Molecular Biology and Biochemistry and of Biological Sciences*

James H. Fallon, Ph.D. University of Illinois, *Professor of Anatomy and Neurobiology and of Biological Sciences*

Hung Fan, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Sciences*

Mark Fisher, M.D. University of Cincinnati, *Chair of the Department of Neurology and Professor of Neurology and of Anatomy and Neurobiology*

Walter M. Fitch, Ph.D. University of California, Berkeley, *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, *Professor of Biological Sciences*

Ron D. Frostig, Ph.D. University of California, Los Angeles, *Associate Professor of Neurobiology and Behavior*

Christine M. Gall, Ph.D. University of California, Irvine, *Vice Chair of the Department of Anatomy and Neurobiology and Professor of Anatomy and Neurobiology, Neurobiology and Behavior, and Biological Sciences*

J. Jay Gargus, M.D., Ph.D. Yale University, *Associate Professor of Physiology and Biophysics and of Pediatrics*

Brandon S. Gaut, Ph.D. University of California, Riverside, *Associate Professor of Biological Sciences*

Roland A. Giolli, Ph.D. University of California, Berkeley, *Professor of Anatomy and Neurobiology and of Biological Sciences*

Charles Glabe, Ph.D. University of California, Davis, *Professor of Biological Sciences*

Alan L. Goldin, M.D., Ph.D. University of Michigan, *Professor of Microbiology and Molecular Genetics, Physiology and Biophysics, and Biological Sciences*

Deborah Grady, Ph.D. The Johns Hopkins University, *Adjunct Assistant Professor of Biological Chemistry*

Gale A. Granger, Ph.D. University of Washington, *Professor of Biological Sciences and Pathology*

Chris L. Greer, Ph.D. University of California, Berkeley, *Associate Professor of Biological Chemistry and Biological Sciences*

Steven Gross, Ph.D. University of Texas, Austin, *Assistant Professor of 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 of 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, Biological Sciences, and Biochemical Engineering*

Bradford A. Hawkins, Ph.D. University of California, Riverside, *Associate Professor of Biological Sciences*

Patrick L. Healey, Ph.D. University of California, Berkeley, *Professor Emeritus of Biological Sciences*

Agnes Henschen-Edman, M.D., Ph.D. Karolinska Institute (Stockholm), *Professor of Biological Sciences and Pathology*

Klemens J. Hertel, Ph.D. University of Colorado, *Assistant Professor of Microbiology and Molecular Genetics*

James W. Hicks, Ph.D. University of New Mexico, *Professor of Biological Sciences*

Franz Hoffmann, Ph.D. University of Hohenheim, *Associate Professor of Biological Sciences*

Christopher C. W. Hughes, Ph.D. University of London, *Assistant Professor of Molecular Biology and Biochemistry and of Biological Sciences*

George L. Hunt, Jr., Ph.D. Harvard University, *Professor of Biological Sciences*

Anthony A. James, Ph.D. University of California, Irvine, *Professor of Biological Sciences*

John W. Jacobs, Ph.D. Washington University, *Adjunct Professor of Biological Chemistry*

Robert K. Josephson, Ph.D. University of California, Los Angeles, *Professor of Neurobiology and Behavior and of Ecology and Evolutionary Biology*

Frances A. Jurnak, Ph.D. University of California, Berkeley, *Professor of Physiology and Biophysics and of Biological Sciences*

Keith Justice, Ph.D. University of Arizona, *Professor Emeritus of Biological Sciences*

Herbert P. Killackey, Ph.D. Duke University, *Associate Executive Vice Chancellor, Academic Personnel, and Professor of Neurobiology and Behavior and of Anatomy and Neurobiology*

Leonard M. Kitzes, Ph.D. University of California, Irvine, *Professor of Anatomy and Neurobiology, Otolaryngology, and Biological Sciences*

Daniel J. Knauer, Ph.D. University of Nebraska, *Associate Professor of Biological Sciences*

Harold Koopowitz, Ph.D. University of California, Los Angeles, *Professor of Biological Sciences*

Murray Korc, M.D. Albany College of Medicine, *Chief of Endocrinology and Professor of Medicine (Endocrinology), Pharmacology, and Biological Chemistry*

Stuart M. Krassner, Sc.D. The Johns Hopkins University, *Professor of Biological Sciences*

John Krolewski, M.D., Ph.D. New York University, *Associate Professor of Pathology and Biological Chemistry*

Frank LaFerla, Ph.D. University of Minnesota, *Assistant Professor of Neurobiology and Behavior*

Arthur D. Lander, Ph.D. University of California, San Francisco, *Associate Director of the Developmental Biology Center and Professor of Biological Sciences and Pharmacology*

Thomas E. Lane, Ph.D. University of California, Los Angeles, *Assistant Professor of Molecular Biology and Biochemistry*

Janos K. Lanyi, Ph.D. Harvard University, *Department Chair of Physiology and Biophysics and Professor of Physiology and Biophysics, Microbiology and Molecular Genetics, and Biological Sciences*

Howard M. Lenhoff, Ph.D. The Johns Hopkins University, *Professor Emeritus of Biological Sciences*

Frances M. Leslie, Ph.D. Aberdeen University (Scotland), *Professor of Pharmacology and of Anatomy and Neurobiology*

Michael Leon, Ph.D. University of Chicago, *Associate Dean of Undergraduate Affairs of the School of Biological Sciences and Professor of Neurobiology and Behavior*

Diane C. Lin, Ph.D. University of California, Los Angeles, *Associate Adjunct Professor of Biological Sciences*

Shin Lin, Ph.D. University of California, Los Angeles, *Associate Vice Chancellor, Biomedical Initiatives, and Professor of Biological Sciences and of Physiology and Biophysics*

Ian W. Lipkin, M.D. Rush Medical School, *Professor of Neurology, Anatomy and Neurobiology, and Microbiology and Molecular Genetics*

Haoping Liu, Ph.D. Cornell University, *Assistant Professor of Biological Chemistry and Biological Sciences*

Anthony D. Long, Ph.D. McMaster University, *Assistant Professor of Biological Sciences*

Kenneth J. Longmuir, Ph.D. University of Oregon, *Associate Professor of Physiology and Biophysics and of Biological Sciences*

Hartmut Luecke, Ph.D. Rice University, *Assistant Professor of Molecular Biology and Biochemistry, Physiology and Biophysics, and Biological 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, *Chair of the Department of Developmental and Cell Biology and Professor of Biological Sciences*

John F. Marshall, Ph.D. University of Pennsylvania, *Professor of Neurobiology and Behavior*

James L. McGaugh, Ph.D. University of California, Berkeley, *Director of the Center for the Neurobiology of Learning and Memory and Research Professor of Neurobiology and Behavior*

Calvin S. McLaughlin, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Chemistry, Biological Sciences, Ophthalmology, and Community and Environmental Medicine*

Alexander McPherson, Ph.D. Purdue University, *Professor of Biological Sciences*

Raju S. Metherate, Ph.D. McGill University, Montreal, *Assistant Professor of Neurobiology and Behavior*

Ronald L. Meyer, Ph.D. California Institute of Technology, *Professor of Biological Sciences*

Frank L. Meyskens, M.D. University of California, San Francisco, *Director of the Chao Family Clinical Cancer Research Center, Chief of Hematology/Oncology, Associate Dean for Research, and Professor of Medicine (Hematology/Oncology)*

Ricardo Miledi, M.D. Universidad Nacional Autónoma de Mexico, *UCI Distinguished Professor of Neurobiology and Behavior and of Molecular Biology and Biochemistry*

Robert K. Moyzis, Ph.D. The Johns Hopkins University, *Professor of Biological Chemistry and Biological Sciences*

Laurence D. Mueller, Ph.D. University of California, Davis, *Assistant Dean of Graduate Studies of the School of Biological Sciences and Professor of Biological Sciences*

R. Michael Mulligan, Ph.D. Michigan State University, *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*

Diane K. O'Dowd, Ph.D. University of California, San Diego, *Associate Professor of Biological Sciences and of Anatomy and Neurobiology*

Timothy F. Osborne, Ph.D. University of California, Los Angeles, *Professor of Biological Sciences*

Andre Ouellette, Ph.D. Indiana University, *Professor of Pathology and of Microbiology and Molecular Genetics*
Ian Parker, Ph.D. University College, London, *Professor of Neurobiology and Behavior*
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 of 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, *Associate Professor of Pathology and of Microbiology and Molecular Genetics in Residence*
Michael R. Rose, Ph.D. University of Sussex, *Professor of Biological Sciences*
Hamid M. Said, Ph.D. University of Aston (England), *Professor of Medicine (Gastroenterology), Physiology and Biophysics, and Pediatrics in Residence*
Ann K. Sakai, Ph.D. University of Michigan, *Associate Professor of Biological Sciences*
Suzanne B. Sandmeyer, Ph.D. University of Washington, *Chair of the Department of Biological Chemistry and Professor of Biological Chemistry, Microbiology and Molecular Genetics, and Biological Sciences*
Rozanne Sandri-Goldin, Ph.D. The Johns Hopkins University, *Professor of Microbiology and Molecular Genetics and of Biological Sciences*
Thomas F. Schilling, Ph.D. University of Oregon, *Assistant Professor of Biological Sciences*
Michael E. Selsted, 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, *Chair of the Department of Microbiology and Molecular Genetics and Professor of Microbiology and Molecular Genetics and of Biological Sciences*
Donald Senear, Ph.D. University of Washington, *Professor of Biological Sciences*
Martin A. Smith, Ph.D. University of Newcastle Upon Tyne, *Associate Professor of Anatomy and Neurobiology and of Biological Sciences*
Moyra Smith, M.D. University of Pretoria (South Africa), Ph.D. University College (London), *Professor Emerita of Pediatrics (Genetics and Development)*
Ivan Soltesz, Ph.D. L. Eötvös University (Hungary), *Associate Professor of Anatomy and Neurobiology and of Physiology and Biophysics*
George Sperling, Ph.D. Harvard University, *UCI Distinguished Professor of Cognitive Sciences and of Biological Sciences*
Eric J. Stanbridge, Ph.D. Stanford University, *Professor of Microbiology and Molecular Genetics and of Neurobiology and Behavior*
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*
Oswald Steward, Ph.D. University of California, Irvine, *Director of the Reeve-Irvine Research Center, Professor of Anatomy and Neurobiology and of Neurobiology and Behavior, and Reeve-Irvine Chair in Spinal Cord Injury and Research*
Georg Striedter, Ph.D. University of California, San Diego, *Assistant Professor of Neurobiology and Behavior*
Katumi Sumikawa, Ph.D. Imperial College, London (England), *Associate Professor of Neurobiology and Behavior*
Richard Symanski, Ph.D. Syracuse University, *Senior Lecturer in Biological Sciences*
Ji Sze, Ph.D. Purdue University, *Assistant Professor of Anatomy and Neurobiology*
Ming Tan, M.D. The Johns Hopkins University, *Assistant Professor of Microbiology and Molecular Genetics and of Biological Sciences*
Andrea J. Tenner, Ph.D. University of California, San Diego, *Professor of Molecular Biology and Biochemistry and of Biological Sciences*
Krishna K. Tewari, Ph.D. Lucknow University, *Professor of Biological Sciences*
Leslie M. Thompson, Ph.D. University of California, Irvine, *Assistant Adjunct Professor of Biological Chemistry*
Bruce Tromberg, Ph.D. University of Tennessee, *Associate Professor of Surgery, Physiology and Biophysics, and Electrical and Computer Engineering*
Marcel Verzeano, M.D. University of Pisa Medical School (Italy), *Professor Emeritus of Neurobiology and Behavior*
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 and Neurology*
Edward K. Wagner, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Sciences*
Ping H. Wang, M.D. Kaoshing University, *Assistant Professor of Medicine (Endocrinology) and Biological Chemistry*
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 Neurobiology and Behavior and of Cognitive Sciences*
Arthur E. Weis, Ph.D. University of Illinois, *Professor of Biological Sciences*
John H. Weiss, M.D., Ph.D. Stanford University, *Associate Professor of Neurology, Anatomy and Neurobiology, and Neurobiology and Behavior*
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 of Biological Sciences*
Clifford A. Woolfolk, Ph.D. University of Washington, *Professor Emeritus of Biological Sciences*
Pauline Yahr, Ph.D. University of Texas, *Professor of Neurobiology and Behavior*
Kyoko Yokomori, Ph.D. University of Southern California, Ph.D. of Agriculture (Veterinary Medicine) University of Tokyo, *Assistant Professor of Biological Chemistry and Biological Sciences*

OVERVIEW

No one can predict the future, but this much is known: the next 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 several hundred undergraduate, 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 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.

The School offers majors in Biological Sciences, Biochemistry and Molecular Biology, and Neurobiology. In addition, students who wish to focus on a particular area may choose to obtain a specialization along with their Biological Sciences degree in: Cell Biology, Developmental Biology, Ecology, Evolution, Microbiology, Molecular Biology and Biochemistry, Neurosciences, Physiology, and Plant Sciences.

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.

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, Neurobiology and Behavior, Physiology and Biophysics, and Protein Engineering Science.

Degrees

Biochemistry and Molecular Biology ..... B.S.
Biological Sciences ..... B.S., M.S., Ph.D.
Neurobiology ..... B.S.
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, be officially declared a Biological Sciences major; have completed at least 72 units while in residence at a UC campus; have all corrections to the academic record processed by the Registrar's Office; if completing the Language Other Than English breadth requirement with a language exemption test, pass the test by the end of winter quarter; and be able to verify completion of all course work by the end of the spring quarter of the senior year. Other important factors are considered (see page 51).

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. 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 Programs

ADMISSION TO THE MAJOR IN BIOLOGICAL SCIENCES

In the event that the number of students who elect Biological Sciences as a major exceeds the number of positions available, applicants may be subject to screening beyond minimum University of California admissions requirements.

Freshmen: Preference will be given to those who rank the highest using the selection criteria as stated in the Undergraduate Admissions section of this *Catalogue*.

Transfer students: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission. All applicants must complete one year of general chemistry with laboratory with grades of B or better and have a cumulative GPA of 3.0 or higher.

No student may enter as a double major, but Biological Sciences students interested in other areas may apply to become double majors after the first quarter, if the second school or program approves. A strong academic performance in the second area is requisite for acceptance as a double major.

CHANGE OF MAJOR POLICY FOR THE DEGREE IN 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 GPA of 2.0; (b) completion of an additional two required science courses for the major with an average GPA of 2.0 (example: any two of Biological Sciences 94, 96, Mathematics 2A-B-C, 7); (c) an average 2.0 GPA in any required science course sequence completed for the major (i.e., the separate GPAs for biology, general chemistry, organic chemistry, mathematics, and physics must each average a 2.0 GPA or above; (d) a cumulative GPA of 2.0, and less than 120 quarter units completed; (e) completion of the Subject A Requirement; and (f) a quarterly GPA of 2.0 or better in the quarter immediately preceding the change of major.

Students Who Entered UCI as Transfers: (a) completion of at least three quarters of work done at UCI; (b) completion of Chemistry 1A-B-C and 1LB-LC with an average GPA of 2.0 (if this was completed at another institution before transferring to UCI, then at least three required science courses for the major must be completed at UCI with an average GPA of 2.0); (c) an average 2.0 GPA in any required science course sequence completed for the major (i.e., the separate GPAs for biology, general chemistry, organic chemistry, mathematics, and physics must each average a 2.0 GPA or above); (d) a cumulative GPA of 2.0; and (e) a quarterly GPA of 2.0 or better in the quarter immediately preceding the change of major.

Selection criteria are subject to change. Students should consult the Biological Sciences Student Affairs Office for current information.

The Majors in Biochemistry and Molecular Biology and in Neurobiology. Biological Sciences students who meet specified course and grade requirements may apply to change their major to either Biochemistry and Molecular Biology or to Neurobiology. See the sections about these majors for detailed information concerning change of major requirements and procedures.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

The following requirements are effective fall 2000. Students who began college prior to fall 2000 should consult the Biological Sciences Student Affairs Office for degree requirement information.

All School of Biological Sciences students must complete the following requirements.

University Requirements: See pages 54–59.

School Requirements

A. 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.

B. Humanities 1A-B-C, *or* its alternative, the lower-division writing requirement of the breadth requirement (Category I) and an approved three-quarter series of courses in the humanities. See the Biological Sciences Student Affairs Office for a list of approved courses.

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: After matriculation, all required Biological Sciences courses and laboratories must be successfully completed at UCI. The School of Biological Sciences strictly enforces the UCI residence requirement. Credit for the last 36 units of work immediately preceding graduation must be earned in residence at the UCI campus. (The School considers courses taken in the Education Abroad Program to be in-residence courses.)

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: Category III, Social and Behavioral Sciences; Category VI, Language Other Than English; and Category VII, Multicultural Studies and International/Global Issues. Transfer students will also be required to satisfy the upper-division writing requirement.

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. Biological Sciences 100L with a grade of C or better satisfies the upper-division writing requirement. Chemistry and physics satisfy Category II, Natural Sciences. Category V, Mathematics and Symbolic Systems, is satisfied by completion of the School mathematics requirement.

Undergraduate Major in Biological Sciences

The Biological Sciences major presents a unified, in-depth study of modern biology. The Biological Sciences Core is an 11-quarter series of courses ranging from diversity, ecology, genetics, biochemistry and molecular biology, to cell biology, physiology, and neurobiology. Important laboratory techniques and methodology are presented in upper-division laboratories. Satellite courses provide an opportunity to continue to diversify students' exposure to the biological sciences or to gain a much more in-depth study of a particular area of the biological sciences.

NOTE: Biological Sciences majors who successfully complete their second year of study may elect to apply to the Biochemistry

and Molecular Biology major or the Neurobiology major. See the sections about these majors for more information.

REQUIREMENTS FOR THE B.S. DEGREE IN BIOLOGICAL SCIENCES

The following requirements are effective fall 2000. Students who began college prior to fall 2000 should consult the Biological Sciences Student Affairs Office for degree requirement information.

University Requirements: See pages 54–59.

School Requirements: See page 123.

Major Requirements

Biological Sciences Core Curriculum (94, 96, 97, 98, 99, 100L, 107, 108, 109, 110, 194S); four satellite courses; Chemistry 130A-B-C or 131A-B-C or Physics 147A-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, 113L, 114L, 115L, 116L, 121L, 122L, 124L, and 166.

School Residence Requirement: See page 123.

Specializations: Students may select an area of specialization by completing the specified laboratory course and four of the satellite courses in one area.

Cell Biology. Laboratory: Biological Sciences 111L; Satellites: 121, 128, 130A, 130B, 143, 144A, 144B, 144C, 145A.

Developmental Biology. Laboratory: Biological Sciences 111L; Satellites: 136, 137B, 144A, 144B, 145A, 147, 148, 149, 151.

Ecology. Laboratory: Biological Sciences 166; Satellites: 118, 126, 133, 150, 167, 170, 174, 175, 176, 178, 179, 179L, 181, 184, 185, 186.

Evolution. Laboratory: Biological Sciences 115L; Satellites: Biological Sciences 135, 142, 168, 172, 173, 174, 176, 184, 185.

Microbiology. Laboratory: Biological Sciences 122L; Satellites: 122, 124, 125, 126, 127, 137A, 143.

Molecular Biology and Biochemistry. Laboratory: Biological Sciences 114L or 116L; Satellites: 120, 121, 123, 124, 125, 126, 128, 140, 144A, 144B, 144C, 145A, 147, 151.

Neurosciences. Laboratory: Biological Sciences 113L; Satellites: 119, 132, 146, 149, 152, 153, 154, 158, 159, 160, 161, 163, 164, 171, 177, 182.

Physiology. Laboratory: Biological Sciences 112L; Satellites: 126, 132, 134, 138, 157, 183, 188.

Plant Sciences. Laboratory: Biological Sciences 111L; Satellites: 129, 129L, 134, 144C, 172, 185.

PLANNING A PROGRAM OF STUDY

Since biological sciences courses are built upon a base of the physical sciences, it is very important for students to take their required physical sciences early, particularly general and organic chemistry. Students who have not completed high school chemistry are well advised to complete a preparatory chemistry course before entering UCI. The academic program shown is only a suggested program. Students should consult the Biological Sciences Student Affairs Office for individual academic planning.

Freshmen will normally take Humanities 1A, Chemistry 1A, Biological Sciences 94, and a freshman seminar (Biological Sciences 2A) during the fall quarter. Students will then continue with Biological Sciences 96 and a recommended Biological Sciences elective, 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, 99, and 100L; students enrolling in 100L must have completed or be concurrently enrolled in Biological Sciences 98 and 194S. Sophomores also complete the Humanities requirement if they have not taken it during their freshman year and 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 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.

Students in the Biological Sciences major are required to make progress toward their degree. Students' progress will be monitored. If normal academic progress toward the degree in Biological Sciences is not being met, students will be subject to probation.

Sample Program — Biological Sciences

FALL	WINTER	SPRING
Freshman		
Chemistry 1A	Bio. Sci. 96	Bio. Sci. elective
Humanities 1A[1]	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Bio. Sci. 94	Humanities 1B	Humanities 1C
Bio. Sci. 2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA[2]	Chemistry 51B, 51LB	Chemistry 51C
Mathematics 2A	Mathematics 2B	Mathematics 2C or 7
Bio. Sci. 194S	Bio. Sci. 100L[3]	
Junior		
Bio. Sci. Core	Bio. Sci. Core	Bio. Sci. Core
Physics	Physics	Physics
Bio. Sci. satellite[4] or upper-division laboratory	Bio. Sci. satellite or upper-division laboratory	Bio. Sci. satellite or upper-division laboratory
Elective/Research[5]	Elective/Research	Elective/Research
Senior		
Bio. Sci. Core	Bio. Sci. satellite or upper-division laboratory	Bio. Sci. satellite or upper-division laboratory
Bio. Sci. satellite or upper-division laboratory	Research	Research
Elective	Electives	Electives

[1] Students may replace Humanities 1A-B-C with its alternative of the lower-division writing requirement of the breadth requirement (Category I) and an approved three-quarter series of courses in the humanities. 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.

[2] Students may take Chemistry 52A-B-C, 52LA-LB instead of 51A-B-C, 51LA-LB.

[3] Prerequisites for Biological Sciences 100L are completion of or concurrent enrollment in Biological Sciences 98 and 194S, and satisfactory completion of the lower-division writing requirement. Biological Sciences 100L must be completed prior to taking the three upper-division laboratories.

[4] In addition to the listed Biological Sciences satellite courses, Chemistry 130A-B-C or 131A-B-C, Physics 147A-B-C, and Psychology 112A-B-C (for Biological Sciences/Psychology double majors) are counted as satellites.

[5] Electives should be chosen with the following purposes in mind: UCI breadth requirements; students' own breadth; preprofessional training.

Undergraduate Major in Biochemistry and Molecular Biology

The recent explosive growth of chemical and molecular understanding of biology is a notable scientific achievement. Students who wish to begin an in-depth study of the molecular basis of microbiology, immunology, virology, developmental biology, pathogenesis, and evolution can do so through this major. This program will be especially attractive to those students who intend to pursue an advanced degree in biological or medical sciences. The Biochemistry and Molecular Biology major is based upon required courses in Advanced Biochemistry and Advanced Molecular Biology (Biological Sciences 114 and 116). These courses, along with satellite courses in the areas of biochemistry, molecular biology, microbiology, and genetics, provide majors with a choice to either explore the breadth of the field or to follow a more in-depth study of any of its subdisciplines. The program of study emphasizes laboratory experience through the Biochemistry Laboratory and the Molecular Biology Laboratory (Biological Sciences 114L and 116L), and through either the Immunology Laboratory or the Virology Laboratory (Biological Sciences 121L or 124L), which provide students with the opportunity to develop a range of skills and an appreciation of the experimental foundations of the field.

The major in Biochemistry and Molecular Biology is intended to provide students with the appropriate tools and training to successfully pursue graduate degrees emphasizing basic research skills. This would include Ph.D. and M.S. training as well as combined M.D./Ph.D. programs. In addition, graduates could use their background very effectively in pursuing careers in business, education, law, and public affairs.

REQUIREMENTS FOR THE B.S. DEGREE IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

The following requirements are effective fall 2000. Students who began college prior to fall 2000 should consult the Biological Sciences Student Affairs Office for degree requirement information.

University Requirements: See pages 54–59.

School Requirements: See page 123.

Major Requirements

Biological Sciences Core courses 94, 96, 97, 98, 99, 100L, 194S; Biological Sciences 114 and 116; Biological Sciences 114L and 116L, and one additional laboratory selected from 121L, 124L, or one year of approved research (Biological Sciences 199); four satellite courses selected from Biological Sciences 121, 122, 123, 124, 125, 128, 137A-B, 140, 144A, 145B, 147, 151, or Chemistry 130A-B-C or 131A-B-C; two additional upper-division courses selected from Biological Sciences 107, 108, 109, 110, 117–189, or Chemistry 130A-B-C or 131A-B-C.

School Residence Requirement: See page 123.

Application Process to Declare the Major: Minimum requirements to enter the major include junior-level standing, and completion of Biological Sciences 94, 96, 97, 98, 99, and 100L, and Chemistry 51A-B-C, 51LA-LB or 52A-B-C, 52LA-LB. (In addition, transfer students must have completed three quarters in residence at UCI in order to be eligible for the major.) *Barring exceptional circumstances, applicants must have a B average or better in Biological Sciences and Chemistry courses for the year preceding entry into the major.* Applications to declare the major can be made in spring, typically in the sophomore year, with a review of applications and selection to the major by the Molecular and Biochemistry Faculty Board completed during the summer. Double majors between Biochemistry and Molecular Biology and either Biological Sciences, Applied Ecology, or Neurobiology will not be approved.

Sample Program — Biochemistry and Molecular Biology

FALL	WINTER	SPRING
Freshman		
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Bio. Sci .94	Bio. Sci. 96	Bio. Sci. elective
Humanities 1A[1]	Humanities 1B	Humanities 1C
Bio. Sci. 2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Bio. Sci. 194S	Bio. Sci. 100L[3]	Chemistry 51C
Chemistry 51A, 51LA[2]	Chemistry 51B, 51LB	Mathematics 2C or 7
Mathematics 2A	Mathematics 2B	Breadth/Elective
Junior		
Bio. Sci. 114L	Bio. Sci. 114	Bio. Sci. 116
Biochem./Mol. satellite	Biochem./Mol. satellite	Biochem./Mol. satellite
Bio. Sci. upper-division lab or research	Bio. Sci. upper-division lab or research	Bio. Sci. upper-division lab or research
Physics 3A	Physics 3B, 3LB	Physics 3C, 3LC
Senior		
Biochem./Mol. satellite	Bio. Sci. satellite or lab	Bio. Sci. satellite or lab
Bio. Sci. satellite or lab	Research/Elective	Research/Elective
Research/Electives	Breadth/Electives	Breadth/Electives
Breadth/Electives		

[1] Students may replace Humanities 1A-B-C with its alternative of the lower-division writing requirement of the breadth requirement (Category I) and an approved three-quarter series of courses in the humanities. See the Biological Sciences Student Affairs Office for a list of approved courses. 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.

[2] Students may take Chemistry 52A-B-C, 52LA-LB in place of Chemistry 51A-B-C, 51LA-LB.

[3] Prerequisites for Biological Sciences 100L are completion of or concurrent enrollment in Biological Sciences 98 and 194S, and satisfactory completion of the lower-division writing requirement. Biological Sciences 100L must be completed prior to taking upper-division laboratories

Undergraduate Major in Neurobiology

The Neurobiology major is designed to teach students how neurobiologists apply cellular, molecular, systems, and behavioral analyses in understanding how the nervous system works. The hallmark of the major is a year-long, in-depth exploration of the intellectual tools used to create, advance, and disseminate knowledge about the nervous system. Through neurobiology satellite courses, students acquire advanced factual knowledge about neurobiology. In addition, Neurobiology majors may choose to participate in research through Biological Sciences 199, where they will learn technical skills and receive mentoring from faculty members.

Students completing the Neurobiology major will be well qualified for admission to graduate or professional schools in preparation for careers in biological research, medicine, dentistry, veterinary medicine, nursing, and other related fields. Even without additional education, they will be competitive for positions in the pharmaceutical industry, the health care delivery industry, or in medically or biologically related technologies. The major also provides valuable preparation for students interested in entering other disciplines that increasingly interface with biology and biotechnology, such as law, business administration, and government policy. Additionally, the major provides excellent preparation for students who wish to become high school science teachers.

REQUIREMENTS FOR THE B.S. DEGREE IN NEUROBIOLOGY

The following requirements are effective fall 2000. Students who began college prior to fall 2000 should consult the Biological Sciences Student Affairs Office for degree requirement information.

University Requirements: See pages 54–59.

School Requirements: See pages 123.

Major Requirements

Biological Sciences Core courses 94, 96, 97, 98, 99, 100L, 108, 109, 110, 194S; Biological Sciences 156A-B-C; Biological Sciences 113L and two additional upper-division laboratories selected from 111L, 112L, 114L, 115L, 116L, 122L, and 166; two neurobiology satellite courses selected from Biological Sciences 119, 132, 146, 149, 152, 153, 154, 158, 159, 160, 161, 163, 164, 171, 177, and 182; one satellite course selected from Biological Sciences 118–189 (excluding the courses listed above), or from Chemistry 130A-B-C, Chemistry 131A-B-C, and Physics 147A.

School Residence Requirement: See page 123.

Application Process to Declare the Major: Minimum requirements to enter the major include junior-level standing; completion of Biological Sciences 94, 96, 97, 98, 99, and 110; and a B average or better in all courses required for the major that have been completed at the time of application (Chemistry, Mathematics, Humanities). Applications to declare the major can be made in spring, typically in the sophomore year, with review of applications and selection to the major by the Neurobiology Faculty Advisory Board to be completed during the summer. Double majors between Neurobiology and either Biological Sciences, Biochemistry and Molecular Biology, or Applied Ecology will not be approved.

Sample Program — Neurobiology

FALL	WINTER	SPRING
Freshman		
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Bio. Sci. 94	Bio. Sci. 96	Bio. Sci. elective
Humanities 1A[1]	Humanities 1B	Humanities 1C
Bio. Sci .2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Bio. Sci. 194S	Bio. Sci. 100L[3]	Bio. Sci. 110
Chemistry 51A, 51LA[2]	Chemistry 51B, 51LB	Chemistry 51C
Mathematics 2A	Mathematics 2B	(option: Math. 2C or 7)
Junior		
Bio. Sci. 156A	Bio. Sci. 156B	Bio. Sci. 156C
Bio. Sci. 108 or 109	Bio. Sci. 108 or 109	Bio. Sci. satellite, lab,
Bio. Sci. 113L	Physics 3B, 3LB	or research
Physics 3A	Research/Elective	Physics 3C, 3LC
Senior		
Bio. Sci. 107 or 108 or 109	Bio. Sci. satellite or laboratory	Bio. Sci. satellite or laboratory
Bio. Sci. satellite or laboratory	Research/Elective	Research/Elective
Mathematics 2C or 7	Electives	Electives
Research/Electives		

[1] Students may replace Humanities 1A-B-C with its alternative of the lower-division writing requirement of the breadth requirement (Category I) and an approved three-quarter series of courses in the humanities. See the Biological Sciences Student Affairs Office for a list of approved courses. 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.

[2] Students may take Chemistry 52A-B-C, 52LA- LB in place of Chemistry 51A-B-C, 51LA-LB.

[3] Prerequisites for Biological Sciences 100L are completion of or concurrent enrollment in Biological Sciences 98 and 194S, and satisfactory completion of the lower-division writing requirement. Biological Sciences 100L must be completed prior to taking upper-division laboratories.

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 before they graduate. In order to assure academic quality and a true research experience, students are expected to complete an Abstract Form briefly describing the focus and thesis of the research project. Students conducting research directly with patients or other human subjects must comply with special enrollment procedures. Visit the Biological Sciences Student Affairs Office, 231 Steinhaus Hall, for complete instructions.

At the end of each quarter that a student participates in 199 research, the student must submit a Summary Report.

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) Environmental Biology Supercourse

The White Mountain Research Station Environmental Biology 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 four-course experience, 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—Physiological Ecology (Biological Sciences 126), Field Ecology (Biological Sciences 133), and Applied Conservation Biology (Biological Sciences 170). 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 (949) 824-6006 or visit the WMRS Web site at http://www.wmrs.edu/ for more information.

Minority Science Program in Biological Sciences

The Minority Science Program (MSP) in Biological Sciences is a UCI umbrella program that provides infrastructure and orchestration for the operation of minority training grants supported by the National Institutes of Health (NIH) and other agencies. MSP seeks to increase the number of U.S. underrepresented groups in biomedical research careers. MSP participants benefit from early exposure, continuous research training, and faculty mentoring. Support is also provided through paid summer and year-round research internships, access to the latest computer technology, tutoring, academic advising, scientific writing, and participation at national conferences. Furthermore, MSP has established a campuswide, regional, national, and international network of committed faculty and resource programs to facilitate the transition from high school through community college, baccalaureate, and master's degrees to Ph.D. careers in biomedical research and related fields. For an application and additional information, visit the MSP Web site at: http://darwin.bio.uci.edu/~bio/msp.

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 Biomedical Engineering

The minor in Biomedical Engineering is an interdisciplinary curriculum that includes courses from the Schools of Engineering, Physical Sciences, and Biological Sciences. The minor is designed to provide a student in the biological sciences with the introductory skills needed in the quantitative biomedical arena. See the School of Engineering section of this *Catalogue* for more information.

Minor in Earth and Atmospheric Sciences

The minor in Earth and Atmospheric Sciences focuses on the application of physical, chemical, and biological principles to understanding the complex interactions of the atmosphere, ocean, and land through climate and biogeochemical cycles. See the Department of Earth System Science in the School of Physical Sciences section of this *Catalogue* for more information.

Minor in Global Sustainability

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section of this *Catalogue* for more information.

Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; telephone (949) 824-5461; e-mail: honors@uci.edu; World Wide Web: http://www.honors.uci.edu/.

Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. Specifically, Biology majors should consider the EAP programs in the United Kingdom, Canada, Sweden, Australia, Denmark, and Costa Rica. See the Center for International Education section for additional information.

Students may wish to participate in the Education Abroad Program's Tropical Biology Quarter which is for undergraduates with at least one year of introductory biology, one quarter of upper-division biology, and a serious interest in biological studies. The program includes lectures, field laboratories, and independent research, with an emphasis on direct field experience. Students also take a course in Spanish language and Latin American culture.

Master of Science with a Concentration in Biotechnology

The School of Biological Sciences offers a master's program with a concentration in Biotechnology designed to train students to enter the field of biotechnology as skilled laboratory practitioners. The upper-division course requirements for admission into the program are extensive. Students interested in applying for admission to the Biotechnology program should plan to complete the necessary courses during their junior and senior years. See the Graduate Study in Biological Sciences section for more information.

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 Institute and Medical Clinic, a research, training, and service facility in the area of laser microbeam technology; the School of Biological Sciences Biohazard (P-3) Facility, which provides laboratory facilities for working with biological agents or biological molecules such as recombinant DNA which would be hazardous when used in open laboratories; the Developmental Biology Center, devoted to analyzing the cellular and genetic mechanisms underlying growth, development, and regeneration; the Center for the Neurobiology of Learning and Memory, a research center for studies of the brain mechanisms underlying learning and memory; the Institute for Brain Aging and Dementia; the Irvine Research Unit in Animal Virology, which includes the Viral Vector Design research group; the Conservation Biology Project; the Cancer Research Institute; the UCI Arboretum, a botanical garden facility; the San Joaquin Marsh Reserve, which supports controlled marsh biota; the Burns Piñon Ridge Reserve, a high-desert habitat in San Bernardino County; and the UCI Ecological Preserve, which includes coastal hills on the campus, once under heavy grazing, but now returning to a more natural state. It is important to note that the School 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 2A) 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 Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information. 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 and should plan to enroll in Biological Sciences 3A. Admissions tests for medical, dental, pharmacy, and graduate schools should be taken in the spring, a year and one-half before the student plans to enter.

Leaders in nearly all health professional schools recommend that students preparing to seek admission to their schools plan to obtain a bachelor's degree. Students who plan to enter a school of dentistry, medicine, or other areas of the health sciences may receive the required preprofessional training at UCI. This preprofessional training may be accomplished by (1) completing the major in Biological Sciences or (2) majoring in any school or department *and* fulfilling concurrently the specific course requirements of the dental, medical, or other professional school the student expects to attend.

Students interested in the health sciences should choose electives in the social sciences, possibly a foreign language, physical chemistry, or other specific courses required or recommended by graduate schools.

The Biological Sciences Student Affairs Office offers specialized services, for a fee, to all students applying to postgraduate professional schools in the health sciences, including a personal file containing the student's letters of recommendation, and a service of sending all recommendations for a student to professional and graduate schools.

Student Participation

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.

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 Sams. The Flying Sams of UCI is comprised of student volunteers involved in providing dental and medical care at the El Testerazo 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 Testerazo. The Flying Sams is dedicated to serving the community of El Testerazo with compassion and a commitment to excellence.

Future Physicians of America. The Future Physicians of America club is dedicated to providing the UCI student body with information regarding health professional schools and presenting guest speakers from various medical, osteopathic, and allied health schools, as well as various other institutes. The club also provides information about research, volunteering, personal statements, and the MCAT. Currently enrolled medical students are also on hand to give details about the admissions experience and to talk about life in medical school.

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.

Med Times. Through the art of journalism, this medical newspaper is dedicated to educating UCI students interested in entering the health field. Roles of prospective members include editors, layout and designers, writers, researchers, photographers, public relations, and much more. Members have the opportunity to interview UCI Medical School faculty and physicians, optometrists, pharmacists, and other leaders of the health field in order to write and publish articles for this medical newspaper with a distribution of 15,000. *Med Times* strives to help UCI Biological Sciences students become the well-rounded physicians, pharmacists, dentists, researchers, and optometrists of tomorrow. Workshops on entrance examinations, interviewing skills, personal statements, and undergraduate survival skills are given. An annual retreat in Big Bear, California, promotes fun and unity within the *Med Times* family. For more information, send an e-mail message to Medtimes@yahoo.com.

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, and industry.

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 through guest speakers such as well-respected optometrists, students in optometry schools, and admissions officers from prestigious colleges of optometry throughout the country. Members have the opportunity to tour optometrists' offices as well as the Southern California College of Optometry. Workshops on the application process, interviewing skills, and preparation for the optometry school entrance examination also are available. The club tries to offer support and guidance to those who may find the application process confusing and intimidating.

Undergraduate Courses in Biological Sciences

1A-B Life Sciences (4-4) F, W, S. 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. Open to nonmajors only. **(II)**

2A Freshman Seminars (1). Lecture, one hour; seminar, one hour. Weekly meetings consisting of presentations by faculty, professional staff, and New Student Peer Academic Advisors provide information about the School of Biological Sciences, campus resources, and special programs/opportunities. Pass/Not Pass only. Open to freshman Biological Sciences majors only.

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.

4 Introduction to Biomedical Research and Careers (0). A seminar series for students interested in careers in the biological sciences and medicine. Presents a broad view of research areas, experimental approaches, clinical and industrial applications, issues of national health policies and economics, career paths in the biomedical sciences. May be repeated for credit as topics vary. One unit of workload credit only.

5 Introduction to Molecular Biology (4). Lecture, three hours. Molecules of life, with emphasis on medical applications. Open to nonmajors only. **(II)**

6 Tropical Biology: Race to Save the Tropics (4). Lecture, three hours. Population growth combines with tropical resource consumption by industrialized nations to cause high rates of deforestation, pollution, habitat fragmentation, and extinction of species. Discusses tropical biomes, their population, community, and ecosystem processes, and possible means of conservation of biodiversity. **(II)**

10 The Biology of Human Infectious Diseases (4). Lecture, three hours. Introduction to concepts of diagnosis, treatment, and prevention of major human infectious diseases. Covers some aspects of epidemiology. Scope and impact of infectious diseases in the present and past experiences in controlling infectious disease. Reviews the biology of human organ systems. Open to nonmajors only. **(II)**

11 Topics in Biological Sciences (4) F, W, S. Studies in selected areas of biological sciences. May be taken for credit three times as topics vary. **(II)**

15 Botany (4) F. Lecture, three hours. Structure and function of flowering plants related to their roles in ecology and human needs. Prerequisite: Biological Sciences 1B for nonmajors; none for majors. **(II)**

20 California Natural History (4) F. Lecture, three hours. Introduction to ecological relationships within a variety of California habitats. Explores aspects of the physical environments and the adaptations of organisms to their physical and biological surroundings in habitats such as the coastal zone, mountains, and deserts. Prerequisite: Biological Sciences 1A for nonmajors; Biological Sciences 96 for majors. **(II)**

25 Biology of Cancer (4) W. Lecture, four hours. Biological, clinical, and psychosocial nature of cancer through the perspectives of medical researchers, biologists, physicians, and health educators. For students of all majors, designed so that each can increase personal awareness of the biology of cancer.

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.

35 The Brain and Behavior (4). Lecture, three hours. Introduction to how the brain works. Biological processes underlying perception, movement, sleep-wake cycles, motivation, language, learning, and memory. Changes in the brain associated with sex differences, drug use, aging, seasons, and time of day. Fundamental properties of the nervous system. Open to nonmajors only. **(II)**

36 Drugs and the Brain (4). Lecture, three hours. Introduction to the actions of drugs on the brain. How studying drug action helps to reveal normal functions of neurons. How drugs can correct neural disorders or disrupt neural function. Biological issues related to drug abuse, drug addiction, and drug seeking. Open to nonmajors only.

37 Brain Dysfunction and Repair (4). Lecture, three hours. Introduction to the disruptions in brain function that underlie disorders such as Alzheimer's disease, Parkinsonism, schizophrenia, and depression, and the basis for drug therapies. The brain's ability to repair itself after damage and the pros and cons of that repair. Open to nonmajors only.

45 AIDS Fundamentals (4) F, W. Lecture, three hours. Considers the biological and sociological bases of the AIDS epidemic. Topics include the history of AIDS, current medical knowledge, transmission, risk reduction, and how the community can respond. Same as Environmental Analysis and Design E45U and Psychology and Human Behavior P45. **(II)**

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 the AIDS Fundamentals course and (2) literature research about biomedical aspects of AIDS. Prerequisite: Biological Sciences 45 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.

55 Introduction to Ecology (4). Lecture, three hours. Principles of ecology; application to populations, communities, ecosystems, and humans. Prerequisite: Biological Sciences 1B. Open to nonmajors only. **(II)**

65 Biodiversity and Conservation (4). Lecture, three hours. A biological perspective on the current environmental crisis. The origin, evolution, and value of biological diversity. Extinction and depletion caused by overexploitation, habitat loss, and pollution. Conservation through habitat preservation and restoration, captive breeding, cryopreservation. Prerequisite: for nonmajors, Biological Sciences 1B; none for majors. **(II)**

75 Human Development: Conception to Birth (4). Lecture, three hours. Processes leading to the birth of a healthy child and the avoidance of birth defects. Male and female reproductive systems, hormonal control of egg-sperm formations, sexual intercourse, contraception, venereal diseases, fertilization, cell division, embryonic development, fetal physiology. Open to nonmajors only. **(II)**

H90 The Science of Biodiversity and Conservation (4) F, W, S. Lecture, three hours; discussion, three hours. The importance of biological sciences in decision-making for individuals, society, and the environment. Topics may include health and disease, genetics and society, biodiversity and conservation. Encourages students to become actively involved in using science to help confront major issues facing society. Prerequisite: restricted to members of the Campuswide Honors Program. **(II)**

92 Special Group Activities F, W, S.

Sec. 1A Health Sciences Experience, Medicine, and Allied Health (0). Opportunities to observe or participate in various health fields. Specific number of hours per quarter of volunteer work with approved health professionals. Passing contingent on completion of minimum specified hours with satisfactory evaluation. Fields include 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. 1C Health Sciences Experience, Optometry (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 Health Science (4) F, W, S. Designed to strengthen biology students' reading, writing, and critical thinking skills to ensure their success at the University and to prepare them for graduate study in medicine, dentistry, optometry, or public health. Pass/Not Pass only. Open to Biological Sciences majors only.

Sec. 5 Curriculum (2). Initiation, planning, and coordination of student-run courses. Prerequisite: consent of instructor. May be repeated for a total of eight units. Pass/Not Pass only.

190 Transfer Student Seminars (1). Lecture, one hour; seminar, one hour. Weekly meetings consisting of presentations by faculty, professional staff, and New Student Peer Academic Advisors provide information about the School of Biological Sciences, campus resources, and special programs/opportunities. Pass/Not Pass only. Open to new transfer students only.

CORE CURRICULUM

Prerequisites listed for Core courses are rigorously enforced. (Transfer students who have successfully completed one or more years of college biology should consult with the Biological Sciences Student Affairs Office for possible exemption from portions of the Core.)

94 Patterns of Diversity, Ecology, and Evolution (4) W. Lecture, three hours. Patterns of diversity, ecology, and evolutionary biology. Emphasis is on the Tree of Life and how its members are distributed and how they interact.

96 Processes of Ecology and Evolution (4) S. Lecture, three hours; discussion, one hour. Principles of ecology and evolutionary biology and their role in explaining organismal diversity. Emphasis is on underlying processes and mechanisms. Prerequisite: Biological Sciences 94.

97 Genetics (4) F. Lecture, three hours; discussion, one hour. Introduction to genetics. Basic features of the replication and expression of DNA; cell division; and gene transmission. Recombination and mutation in diploid organisms. Prerequisite: Biological Sciences 96.

98 Biochemistry (4) W. Lecture, three hours. Structure and properties of proteins; major biochemical pathways and mechanisms for their control. Prerequisites: completion of Biological Sciences 97 and completion of or concurrent enrollment in Chemistry 51B or 52B.

99 Molecular Biology (4) S. Lecture, three hours. Biochemistry and replication of nucleic acids; molecular genetics; protein biosynthesis; genetic code; regulation of expression of genetic information; biochemical evolution. Prerequisite: Biological Sciences 98.

100L Experimental Biology Laboratory (4) W, S. Lecture, two hours; laboratory, three hours. Basic experimental design, laboratory techniques, data gathering skills, and analysis and preservation of data for a variety of areas of inquiry in the biological sciences. Prerequisites: current enrollment in or completion of Biological Sciences 98 and 194S; satisfactory completion of the lower-division writing requirement.

107 Structure and Function of Cells (4) F, W. Lecture, three hours. Delves into the structure and function of cells, with emphasis on the regulation of cellular processes. The basic features of membranes, cellular compartmentalization, protein trafficking, vesicular transport, organelle biogenesis, cellular polarity, endocytosis, and the cell cycle are covered. Prerequisite: Biological Sciences 99.

108 Developmental and Cell Biology (4) S. Lecture, three hours. 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. Corequisite or prerequisite: Biological Sciences 107.

109 Human Physiology (4) F, W. Lecture, three hours. Functional features of the major organ systems in the human body. Emphasis on homeostasis and the interactions of organ systems in health and disease. (Discussion of behavior and brain function deferred to Biological Sciences 110.) Prerequisite: Biological Sciences 99.

110 Neurobiology and Behavior (4) S. Lecture, three hours. Consideration of the evolution of behavior, including ethological and psychological aspects and analysis of neuroanatomical, neurochemical, neurophysiological, and neuroendocrine systems underlying basic behavioral processes. Corequisite: Biological Sciences 99.

UPPER-DIVISION LABORATORIES

Biological Sciences 100L and 194S are prerequisites for 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.

111L Developmental and Cell Biology Laboratory (3) F, W, S. Laboratory, four hours. Prerequisite: Biological Sciences 100L and 194S; and concurrent enrollment in or completion of Biological Sciences 108.

112L Physiology Laboratory (3) F, W, S. Laboratory, four hours. Prerequisites: Biological Sciences 100L, 109, and 194S.

113L Neurobiology and Behavior Laboratory (3) F, S. Laboratory, four hours. Prerequisite: Biological Sciences 100L and 194S; and concurrent enrollment in or completion of Biological Sciences 110.

114L Biochemistry Laboratory (4) F, W, S. Laboratory, four hours. Properties of enzymes and the culture and isolation of mutants of microorganisms. Prerequisite: Biological Sciences 99, 100L, and 194S.

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. Prerequisites: Biological Sciences 97, 100L, and 194S.

116L Molecular Biology Laboratory (4) F, W, S, Summer. Laboratory, four hours. Students perform experiments which illustrate the chemical and biological properties of nucleic acids. Emphasis is placed on recent techniques in recombinant DNA technology including gene isolation and characterization. Prerequisites: Biological Sciences 99, 100L, and 194S.

121L Advanced Immunology Laboratory (4) S. Laboratory, four hours. Emphasis is placed on learning modern techniques in immunology such as ELISAs, western blotting, immunofluorescent staining assays. Prerequisites: Biological Sciences 116L and 121; consent of instructor. Concurrent with Molecular Biology and Biochemistry 221.

122L General Microbiology Laboratory (6) F, W, S, Summer. Laboratory, six hours. Selective isolation of wide variety of microbial types. Characterization and identification by morphological and comparative nutritional and biochemical approaches. Industrial, medical, and biological research applications. Prerequisites: Biological Sciences 100L and 194S; and concurrent enrollment in or completion of Biological Sciences 122.

124L Virus Engineering Laboratory (4) S. Laboratory, four hours. Students learn to engineer recombinant eukuryotic viruses and express genes in mouse tissue. Prerequisites: Biological Sciences 116L and 124; consent of instructor. Concurrent with Molecular Biology and Biochemistry 224.

166 Field Methods in Ecology (4) F. Laboratory, eight hours. Field studies of major concepts in plant and animal ecology, with emphasis on experimental design, field sampling methods, statistical analysis, and scientific writing. An independent project and one weekend camping trip are required Satisfies the upper-division writing requirement with a grade of C or better. Prerequisites: Biological Sciences 96, 100L, 194S, and satisfactory completion of the lower-division writing requirement.

SATELLITE COURSES

114 Advanced Biochemistry (4) S. Lecture, three hours; discussion, one hour. Physico-chemical properties of macromolecules. Structure-function relationships in nucleic acids, protein, carbohydrates, and lipids. Integration and regulation of metabolism. Biochemistry of organs and biochemistry of diseases. Prerequisites: Biological Sciences 98 and 99.

116 Advanced Molecular Biology (4) S. Lecture, three hours; discussion, one hour. Mechanisms of gene expression; special emphasis on regulatory events that occur in Eukaryotic organisms other than initiation of transcription. Chromatin structure and rearrangement, RNA polymerases, cis- and trans-acting elements, RNA processing, transport and stability, protein synthesis, trafficking, and turnover. Prerequisites: Biological Sciences 114, 114L.

118 Terrestrial Ecosystems (4) W. A mechanistic perspective of the structure and functioning of terrestrial ecosystems. Includes the mechanisms that control plant growth, hydrology and nutrient cycling, and the roles terrestrial ecosystems play in local and global biogeochemistry. Prerequisite: Biology 96 or consent of instructor. Same as Earth System Science 120 and Environmental Analysis and Design E179.

119 History of Neuroscience (4). Lecture, three hours. An overview of the conceptual and technical foundations of contemporary neuroscience from ancient times to the present. The subjects include synapses, neurons, brain organization, sensory, motor and regulatory systems, learning and memory, human brain function and dysfunction. Prerequisites: Biological Sciences 35 or 110; or Social Ecology P115D; or Psychology 9A-B-C or Psychology 156B or consent of instructor; and upper-division standing. Concurrent with Neurobiology and Behavior 255.

120 Neurobiology of Alcohol (4) F. 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, S. Lecture, three hours; discussion, one hour. Antibodies, antigens, antigen-antibody reactions, cells and tissues of lymphoreticular and hematopoietic systems, and individual and collective components of cell-mediated and humoral immune response. Prerequisite: Biological Sciences 98 or consent of instructor.

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 (6) F. Lecture, five 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 Cancer (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.

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. 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.

130A, B Photomedicine I, II (4, 4) F, W. Lecture, three hours; discussion, one hour. Studies the use of optical and engineering-based systems (laser-based) for diagnosis, treating diseases, manipulating cells and cell function. Physical, optical, and electro-optical principles are explored regarding molecular, cellular, organ, and organism applications. Same as Engineering ECE175A, B.

132 Muscles and Movement (4). 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 15 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.

135 Molecular Evolution (4) W. Lecture, three hours. Introduction to the study of evolutionary change in genes and DNA sequences. Combines study of molecular biology with the study of evolution. Molecular evolution has application to many disciplines, including molecular biology, virology, systematics, and the origin of life. Prerequisite: Biological Sciences 99.

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.

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 Cell Signaling in Development (4) S. Introduction to the general principles of cell signaling, with emphasis on its role in animal development. Topics include: hormone receptor interactions, G-protein linked signaling, enzyme linked cell surface receptors, growth factor signaling in invertebrate and vertebrate systems. Prerequisite: Biological Sciences 108.

141X Writing/Cell Signaling in Development (2) S. Adjunct to Biological Sciences 141. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 141. Satisfies the upper-division writing breadth requirement with a grade of C or better. Corequisite: Biological Sciences 141. Prerequisites: Biological Sciences 97, 99, and 108; consent of instructor; satisfactory completion of the lower-division writing requirement.

142 Writing/Philosophy of Biology (4) W. Lecture, three hours. Philosophy of biology, e.g., scientific method in biology, the structure of evolutionary theory, teleology, ethics, and evolution. Coursework includes one 4,000-word and four 1,000-word papers. Prerequisites: satisfactory completion of the lower-division writing requirement; Philosophy 40 recommended as background. Same as Philosophy 142 and Social Science 132.

143 Human Parasitology (4) W, S. Lecture, three hours. Introduction to human-animal parasitic diseases including worm and protozoan infections. Prerequisite: Biological Sciences 98 or consent of instructor.

143X Writing/Human Parasitology (2) W, 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 odd 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.

146 Neural Mechanisms of Arousal and Attention (4). Lecture, three hours. A focus on brain mechanisms within thalamic and neocortical circuits that underlie changes in arousal and attention. Examines the integrated actions of cellular, synaptic, and other neural mechanisms identified in preparations ranging from isolated single neurons to behaving animals. Prerequisite: Biological Sciences 110.

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 Vertebrate Embryology (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. Limited to Biological Sciences majors only. 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, Injury, and Repair of the Nervous System (4) F. Lecture, three hours. The formation of the nervous system including neurogenesis, trophic factors, cell death, and formation of nerve connections. Damage to the brain and spinal cord from injury and disease and experimental strategies for repair. 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.

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 Neurobiology and Behavior (2 to 4). Lecture, three hours. Studies in selected areas of neurobiology and behavior. Prerequisite: Biological Sciences 98 or consent of instructor. May be taken for credit three times as topics vary.

153 Neuropharmacology (4). Lecture, three hours. Survey of neurotransmitter systems, focusing on how transmitters are made, how they interact with their receptors, and how drugs can influence these processes to alter neural function and behavior. Prerequisite: Biological Sciences 110.

154 Molecular Neurobiology (4). Lecture, three hours. Nature and actions of genes and gene products that regulate the functioning of the nervous system and its interaction with muscles. Topics include: neural control of gene expression; genetics and molecular biology of neural and neuromuscular diseases; gene therapies for neural disorders. Prerequisite: Biological Sciences 110.

156A-B-C Neuroscience: Fundamental Concepts and Current Applications (2-2-2) F, W, S. Lecture, two hours. In-depth exploration of the intellectual tools used to create, advance, and disseminate knowledge about the nervous system. Develops analytical, reasoning, and communication skills by exploring fundamental issues of data interpretation in cellular, molecular, systems, and behavioral analyses of brain function. Prerequisite: Biological Sciences 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, three hours. How the brain and behavior change as a result of experience, with an emphasis on identifying the neurochemical processes through which memory is stored and the parts of the brain that are involved. Prerequisite: Biological Sciences 35 or 110. Same as Psychology 145B.

159 Animal Behavior (4). Lecture, three hours. Explores why animals behave the way they do from both evolutionary and mechanistic perspectives. Considers selective pressures and evolutionary constraints that shape animal behavior and the underlying neural and hormonal mechanisms by using examples such as why dogs bark, why some birds migrate. Prerequisite: Biological Sciences 110.

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 aphasias; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 35 or 110, or consent of instructor. Same as Psychology 156B and Linguistics 158.

161 Cellular Neurophysiology (4) S. Lecture, three hours. Introduction to the biophysical mechanisms underlying the generation and propagation of signals within and between nerve cells. Emphasizes the roles of ion channels in generating resting and action potentials, the mechanisms of quantal neurotransmitter release, and the ionic conductances involved in synaptic transmission. Prerequisite: Biological Sciences 110.

163 Endocrinology, Neuroendocrinology, and Behavior (4). Lecture, three hours. Survey of the hormones secreted by the endocrine system, their physiological effects, and their mechanisms of action, followed by consideration of how the endocrine and nervous systems interact to regulate each other and behavior. Prerequisite: Biological Sciences 110.

164 Functional Neuroanatomy (4). Lecture, three hours. How neuroscience uses tools of many disciplines, from imaging to behavior, to develop and test hypotheses about functions of specific parts of the brain. Basic organization of nerve cells and vertebrate nervous system; methods of visualizing nerve cells; neural connections, neural activity patterns. Prerequisite: Biological Sciences 110.

167 Plant Population Biology (4) F of odd years. Lecture, three hours. Current topics in plant population biology are reviewed in an ecological and evolutionary context. Topics include aspects of population genetics, population ecology, evolutionary ecology, and applications to conservation biology. Discussions of current literature. Prerequisites: Biological Sciences 97 and 100L.

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). Lecture, 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; two required weekend 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) W. Lecture, three hours; discussion, two hours. Animal behavior as an evolutionary solution to problems encountered during an animal's life cycle. Includes a broad comparative approach to communication, social behavior, habitat selection, and food finding. Prerequisite: Biological Sciences 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.

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.

177 Topics in Cortical Plasticity (4). Focuses on neural mechanisms that underlie cortical plasticity. These include neurophysiological, pharmacological, anatomical, and developmental mechanisms that act at the synaptic, cellular, and system (population of neurons) levels. Prerequisite: Biological Sciences 110.

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.

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. Weekend field trips to estuaries, marshes, lakes, and streams. Prerequisite: concurrent or previous enrollment in Biological Sciences 179.

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.

182 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 or consent of instructor. Same as Psychology 131A. Psychology 130A may not be taken for credit if taken after Biological Sciences 182.

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 (4) W of odd years. Lecture, three 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 Environmental Ethics (4) W. Lecture, three hours. History of evolution of environmental ethics in America. Management problems in national parks, wilderness areas, wild and scenic rivers, national forests. Contemporary and historical aspects/contributors to the field. Mitigation, endangered species, habitat restoration, biodiversity, and environmental activism. Field trips required. Prerequisites: upper-division standing and consent of instructor.

Seminars and Special Courses

191A-B Senior Seminar on Global Sustainability I, II (2-2) F, W. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations. **A:** Prepare bibliography. **B:** Prepare research proposal. In-progress grading for 191A-B, grade for sequence given upon completion of 191C. Prerequisites: senior standing, Biological Sciences 65, Environmental Analysis and Design E20, and Earth System Science 10. Same as Earth System Science 190A-B and Social Ecology 186A-B.

191C Writing/Senior Seminar on Global Sustainability III (4) S. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. Prepare/write research paper under the direction of a faculty member. Prerequisites: Biological Sciences 191A-B and satisfaction of the lower-division writing requirement. Same as Earth System Science 190C and Social Ecology 186C.

193 Research Writing for Biological Science Majors (4). Under the guidance of selected faculty in the School of Biological Sciences and a writing professional, students learn to conduct library research in the field of biology and to write scientific review papers. Prerequisite: upper-division Biological Sciences major.

194 Current Topics in Biology (1) F, W, S. A seminar designed to discuss recent research findings and experimental issues in biology. Meets once each week for one hour. Corequisite: Biological Sciences 199.

194S Safety and Ethics for Research (1) F, W, S. Introduces students to the concepts, techniques, and ethics involved in biological sciences laboratory work. Pass/Not Pass only.

196 Writing for Biology Research (4) W. Lecture, two hours; laboratory, two hours. A science writing and critical reasoning course to be taken the quarter prior to participation in the Excellence in Research Program. Students work in a computer laboratory with full access to writing, library, and network resources and prepare and review a formal scientific paper. Prerequisites: two quarters of Biological Sciences 199; satisfaction of the lower-division writing requirement. Enrollment preference given to students who have taken two or more quarters of Biological Sciences 197.

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.

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.

GRADUATE STUDY IN BIOLOGICAL SCIENCES

The School of Biological Sciences offers graduate study in a wide variety of fields ranging across the spectrum of the biological sciences. The four Departments of the School of Biological Sciences (Developmental and Cell Biology, Ecology and Evolutionary Biology, Molecular Biology and Biochemistry, and Neurobiology and Behavior) and 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 these 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. Additionally, a master's program in Biotechnology, leading to the M.S. degree in Biological Sciences, is offered. 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, with the exception of the master's program in Biotechnology. 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 of 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.

Master of Science with a Concentration in Biotechnology

Department of Molecular Biology and Biochemistry
3205 Biological Sciences II; (949) 824-6034
E-mail: biotech@uci.edu
World Wide Web: http://darwin.bio.uci.edu/
Krishna K. Tewari, **Director**

The field of biotechnology has developed explosively since the discovery of gene cloning and sequencing methods in the mid-1970s. The field is now embodied by many successful companies and an intense demand has developed for well-trained people with up-to-date familiarity with research techniques in the manipulation of nucleic acids, proteins, immunological reagents, and pathogenic organisms. The program in Biotechnology, leading to an M.S. degree in Biological Sciences, provides extensive training in actual research settings (individual faculty laboratories) in techniques relevant to industry, and seminar exposure to the nature of industry. It is designed to train students to enter the field of biotechnology as skilled laboratory practitioners. Emphasis is placed on learning state-of-the-art technology in protein isolation and characterization, animal and microbial cell culture, and recombinant DNA methodology. Students are trained in experimental rationales for solving actual research problems and are encouraged to take summer internships in industry during the course of their studies.

The Department of Molecular Biology and Biochemistry evaluates applicants to the program on the basis of grades, letters of recommendation, GRE scores, and other relevant qualifications. Applicants should have successfully completed courses in calculus, physics, organic chemistry, genetics, biochemistry, molecular biology, microbiology, immunology, and virology, as well as laboratory courses in biochemistry, molecular biology, microbiology, and either animal virology or immunology. However, it is possible to defer up to two of the required laboratory courses to be taken during the first year of graduate study.

The program emphasizes immediate participation in research. First-year students take core technical laboratories in protein isolation and characterization, animal and microbial cell culture, and recombinant DNA methodology and participate in research projects in faculty laboratories. Research training is supported by formal course work in nucleic acids, proteins, genetic engineering, and molecular/cellular biology. A seminar course devoted to product development and marketing also is required. In addition, students are trained rigorously in data recording and presentation and are required to maintain a laboratory notebook for faculty review. Emphasis during the second year is devoted almost solely to participation in research projects in faculty laboratories with one formal required course in molecular biology/cell biology. The program is terminated at the end of the second year by a comprehensive examination.

While the Biotechnology program is designed to produce skilled laboratory practitioners for industrial positions, some students may wish to continue in a program leading to the Ph.D. degree. The Department of Molecular Biology and Biochemistry is a member of the interdisciplinary graduate program in Molecular Biology, Genetics, and Biochemistry, a program which leads to the Ph.D. degree in Biological Sciences. Biotechnology program students who wish to enter the interdisciplinary graduate program upon completion of the M.S. degree should apply for admission during their second year.

INTERDISCIPLINARY GRADUATE PROGRAMS

The School is structured in a manner that encourages an interdisciplinary approach to scientific problems. Interaction and cooperative efforts across traditional institutional boundaries are especially evident in the School's participation in various organized research units (described in the previous 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; (949) 824-8145
E-mail: gp-mbgb@uci.edu
World Wide Web: http://www.bio.uci.edu/
Rozanne M. Sandri-Goldin, **Director**

The combined graduate program in Molecular Biology, Genetics, and Biochemistry (MBG&B) brings more than 100 faculty from the Departments of Anatomy and Neurobiology, Biological Chemistry, Developmental and Cell Biology, Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, and Physiology and Biophysics. Each faculty member's area of research is listed at the beginning of the departmental sections on the following pages. The departments administer a graduate concentration in association with the MBG&B program, which leads to the Ph.D. degree in Biological Sciences. The MBG&B program is designed to offer students a unified curriculum, broad training, and a wide range of research opportunities in the following tracks: cancer biology, cell biology, developmental biology and genetics, immunology and pathogenesis, mechanisms of gene expression, neurobiology, structural biology/molecular biophysics, 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 MBG&B program requirements during their first two years, and in the remaining three years, complete the requirements of one of the eight tracks. 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 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 requirements of a departmental Ph.D. concentration. Further information is available in the *Catalogue* sections of the participating departments and through the MBG&B program office.

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; (949) 824-6686
E-mail: 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
Charles G. Glabe: Amyloid Aβ 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. Senear: 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

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 and Materials Science in the Henry Samueli 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

5207 Biological Sciences II; (949) 824-1721
J. Lawrence Marsh, **Department Chair**

Faculty

Joseph Arditti: Developmental physiology of orchids
Kavita Arora: *Drosophila* development; TGF-β signal transduction; cell signaling
Lee Bardwell: Intracellular signaling in development and disease
Michael W. Berns: Laser microsurgery of cells, embryos, and tissues
Bruce Blumberg: Gene regulation by nuclear hormone receptors in vertebrate development and adult physiology
Hans R. Bode: Pattern formation and stem cell differentiation
Peter J. Bryant: Tumor-suppressor genes of *Drosophila* and humans
Susan V. Bryant: Molecular basis of limb development and regeneration
Richard D. Campbell: 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
Steven Gross: Force Generation by molecular motors in living cells
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
Diane C. Lin: Cell and molecular biology of proteins involved in cytoskeletal and motile functions
Shin Lin: The combined use of biochemistry, cell biology, molecular biology, and molecular biophysics to study the structure and function of proteins involved in cytoskeletal/contractile functions and signal transduction in muscle and nonmuscle cells
J. Lawrence Marsh: Molecular genetics of development in *Drosophila* and humans
Ronald L. Meyer: Development of nerve connections, nerve injury and regeneration
R. Michael Mulligan: RNA editing in plant mitochondria and chloroplasts
Diane K. O'Dowd: Electrical excitability and synaptic connectivity during development
Thomas F. Schilling: Zebrafish development, vertebrate genetics, and craniofacial development

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 (4) W of odd years. Lecture, three hours. Advanced course on the use of genetic analysis to identify the genes that control cell behavior and development. Formal discussion, by instructor, of genetics and the relationship between genotype and phenotype, followed by student-led discussion based on assigned readings.

211 Faculty Research Colloquium (2) F. Research interests of faculty participating in the graduate program in Molecular Biology, Genetics, and Biochemistry are presented in weekly meetings. Corequisite: enrollment in the graduate program in Molecular Biology, Genetics, and Biochemistry.

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 Molecular, Cellular, and Developmental Neurobiology (4) W. Lecture, three hours. Molecular aspects of the structure and function of neurons and glia including neurotransmission, synaptic modulation, and channels. Neural development at the cellular and molecular level including neurogenesis, pattern formation, trophic factors, axonal growth, and synaptic rearrangement. Prerequisite: consent of instructor.

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.

255 Plant Morphogenesis (4) W of even years. Lecture, three hours. Examination of current problems in plant differentiation and its control, primarily at the tissue and whole plant level. A single major topic will be selected each year and will include such subjects as control of morphogenesis in shoot and root apices, flowering, control of cambial growth, pattern formation, plant embryology, and control of the formation of plant organs in culture. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

265 Parasitology (4) F, W, S. Seminar, one hour. Topics vary from year to year. Prerequisite: consent of instructor.

285 Advanced Topics in Cell Biology (2) F, W, S. Lecture, two hours. Seminars, lectures, and informal discussions by invited speakers, graduate students, and faculty. Topics vary from quarter to quarter, but major emphasis is in the areas of plant physiology, development, and biochemistry. 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; (949) 824-6006
World Wide Web: http://www.bio.uci.edu/
Albert F. Bennett, **Department Chair**

Faculty

Francisco J. Ayala: Population and evolutionary genetics
Albert F. Bennett: Environmental physiology; physiological ecology
Rudi C. Berkelhamer: Director of Instructional Laboratories
James D. Bever: Ecology and evolution of plants and fungi
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
Branden S. Gaut: Plant molecular evolution
Bradford A. Hawkins: Insect population and community ecology
James W. Hicks: Comparative physiology of circulation and gas exchange
George L. Hunt, Jr.: Behavioral ecology, marine ornithology
Robert K. Josephson: Comparative neurophysiology; muscle physiology
Harold Koopowitz: Comparative neurophysiology; conservation of endangered plant species
Anthony D. Long: Quantitative genetics
Laurence D. Mueller: Theoretical and empirical studies of density-dependent natural selection
Michael R. Rose: Evolution of life histories and genetic systems
Ann K. Sakai: Plant population biology
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, four hours. A summary of information in organismal biology, comparative and ecological physiology, and the biophysical basis of organismal function. Prerequisite: graduate standing or consent of instructor.

NOTE: Enrollment in the following courses 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.

280 Demystifying DNA (3) W. Laboratory, ten hours. Provides students with hands-on experience in molecular biology techniques, including genomic DNA extractions, PCR, cloning, working with plasmids, Southern blots, library construction, and library screening. Prerequisites: radiation safety course from Environmental Health and Safety; consent of instructor.

285 Topics in Evolutionary Genetics (2). Discussion, one to two hours. Weekly discussion of recent research on evolutionary genetics. Prerequisites: graduate standing and consent of instructor.

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; (949) 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. Cumsky: Mitochondrial protein import; regulation of gene expression in yeast
Rowland H. Davis: Regulation of polyamine metabolism in *Neurospora crassa*
Hung Fan: Molecular biology and pathogenesis of mouse and human retroviruses
Charles G. Glabe: Amyloid Aβ 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
Thomas E. Lane: Molecular/immuno-pathogenic mechanisms of virus-induced demyelinating disease
Hartmut Luecke: Structure-function studies of membrane-associated proteins
Jerry E. Manning: Major surface proteins and their genes in *Trypanosoma cruzi*
Alexander McPherson: X-ray and atomic force microscopy analysis of protein, nucleic acid, and virus crystals; structural immunology, structural virology; microgravity research on macromolecular crystal growth
Ricardo Miledi: Neurotransmitter receptors and synaptic functions
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
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
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 (2-2-2) F, W, S. Tutorials in the area of research of a particular professor which relate current research to the literature. May be conducted as journal clubs. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

203 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 98 and 99 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. (Coordinators, L. Vickery, odd year; Henschen-Edman, even year)

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 Regulation of Gene Expression (4) W. Lecture, three hours. Aspects of gene expression including the organization of the eukaryotic nucleus in terms of protein-nucleic acid interaction (i.e., chromatin and chromosome structure); comparisons between prokaryotic and eukaryotic gene expression, the enzymology and regulation of RNA transcription in E. Coli and other prokaryotes. Enzymology of transcription in eukaryotes. Prerequisites: Molecular Biology 203, 204, and 205. (Coordinators, R. Sandri-Goldin and C. Greer)

207 Advanced Molecular Genetics (4) W. Lecture, three hours. Introduction to genetic analysis using model organisms such as yeast. Topics include meiosis, DNA repair, cell cycle, cytoskeleton, intracellular sorting (nuclear, endoplasmic, mitochondrial), signaling, prions, and genomewide gene expression analysis. Prerequisites: Molecular Biology and Biochemistry 203. May be taken for credit six times. Same as Biological Chemistry 207. (Coordinator, R. Davis)

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 CBE209.

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.

212 Chromosome Dynamics in Eukaryotes (4) S of even years. Focuses on experimental approaches currently in use to investigate mechanisms by which eukaryotes carry out essential chromosomal functions. A combination of lectures and student presentations focus on these problems from the fields of genetics, cell biology, biochemistry, and molecular biology. Prerequisites: Molecular Biology and Biochemistry 203 and 204.

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)

217A Principles of Cancer Biology I (4) W of even years. Lecture, three hours. Oncogenes and tumor suppressor genes are studied from molecular viewpoints. Also studies their role in cancer; viral carcinogenesis. Designed for graduate students interested in cancer research. Format includes lectures and student-led discussions. Prerequisites: Molecular Biology and Biochemistry 203 and 204.

217B Principles of Cancer Biology II (4) W of odd years. Lecture, three hours. Topics include cancer cell growth and metastasis, chemical carcinogenesis, and cancer genetics and epidemiology. Designed for graduate students interested in cancer research. Format includes lectures and student-led discussions. Prerequisites: Molecular Biology and Biochemistry 203 and 204.

218 Clinical Cancer (3) F of even years. Lecture, two hours. Designed to acquaint students in basic life science with clinical cancer. Restricted to graduate and postdoctoral students. May be repeated for credit. (Coordinator, H. Fan)

220 Structure and Synthesis of Biological Macromolecules Journal Club (2). Seminar, one hour. Advanced topics in macromolecular structure and synthesis as related to biological problems. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

221 Advanced Immunology Laboratory (4) S. Laboratory, four hours. An advanced course in immunology for graduate students enrolled in the Biotechnology master's program. Emphasis is placed on learning modern techniques in immunology such as ELISAs, western blotting, immunofluorescent staining assays. Prerequisite: graduate standing. Concurrent with Biological Sciences 121L.

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 Virus Engineering Laboratory (4) S. Laboratory, four hours. An advanced laboratory for graduate students enrolled in the Biotechnology master's program. Students learn to engineer recombinant eukuryotic viruses and express genes in mouse tissue. Prerequisite: graduate standing. Concurrent with Biological Sciences 124L.

227 Immunology Journal Club (2) F, W, S. Seminar and discussion, one hour. Advanced topics in immunology as related to an understanding of human disease. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

229 Research-in-Progress Seminars (1) F, W, S. Seminar and discussion, one hour. Two half-hour presentations by graduate students and postdoctorals to the department on their current research projects. Satisfactory/Unsatisfactory only. May be taken for credit 15 times.

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. Prerequisites: Molecular Biology 203 and 204. Concurrent with Biological Sciences 140. (Coordinators: D. Senear and T. Poulos)

244 Biochemistry of Synaptic Plasticity (4) S. Lecture, two hours; discussion, one hour. Use of the primary literature to explore recent developments in the biochemistry of synaptic transmission that pertain to plasticity, memory, and learning, with a particular emphasis on the role of protein phosphorylation and related signal transduction pathways. Same as Neurobiology and Behavior 244.

250 Recombinant DNA Technology (4). F, W, S. Laboratory, four hours. Individual training in major techniques of recombinant DNA, including extraction and purification of nucleic acids, cloning and subcloning, DNA sequencing, nucleic acid hybridization, and associated procedures. Student must demonstrate accurate documentation of data with laboratory notebook detailing experience.

251 Protein Isolation and Characterization (4) F, W, S. Individual training in major techniques of handling proteins, including isolation, various purification procedures, characterization, and tests for biological or catalytic activity. Student must demonstrate accurate documentation of data with laboratory notebook detailing experience.

252 Animal and Microbial Cell Culture (4) F, W, S. Individual training in techniques of animal and microbial cell culture, particularly as required in immunological and virological laboratories. Student must demonstrate accurate documentation of data with laboratory notebook detailing experience.

254 Protein Crystallography (3) S of even years. Lecture, three hours. Introduces students to the theory and practice of macromolecular crystallography. Covers all aspects, including protein crystallization, space groups, phasing methods, electron density map interpretation, refinement and preparation of results for publication. Corequisite: calculus. Prerequisite: consent of instructor. Same as Physiology and Biophysics 211.

280 Advanced Topics in Biochemistry and Molecular Biology (3) F. Lecture, three 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 NEUROBIOLOGY AND BEHAVIOR

2205 Biological Sciences II; (949) 824-8519
Thomas J. Carew, **Department Chair**

Faculty

Dana Aswad: Neurochemistry and molecular neurobiology
Lawrence F. Cahill: Brain mechanisms of emotion and memory
Thomas J. Carew: Cellular and molecular mechanisms of memory
Carl Cotman: Brain aging, Alzheimer's, cell biology, biochemistry
Ron D. Frostig: Functional organization of cortex
Christine M. Gall: Regulation of neuronal gene expression
Robert K. Josephson: Design of skeletal muscle
Herbert P. Killackey: Developmental neuroanatomy
Frank LaFerla: Alzheimer's, neural apoptosis, transgenic animal modeling
Michael Leon: Brain development
John Marshall: Neuropharmacological approaches to behavioral analysis
James L. McGaugh: Neurobiology of learning and memory
Raju Metherate: Synaptic physiology and plasticity in sensory neuroprocesses
Ricardo Miledi: Molecular neurobiology and physiology of ion channels and receptors
Ian Parker: Intracellular calcium and cell signaling
George Sperling: Cognition, vision, and visual perception
Oswald Steward: Mechanisms of synapse growth and plasticity
Georg Striedter: Neuroethology, behavioral neuroscience, evolutionary neurobiology
Katumi Sumikawa: Molecular neurobiology of synapses
Norman M. Weinberger: Neural bases of attention and learning
John H. Weiss: Excitatory amino acids in neural signaling and neurodegeneration
Pauline Yahr: Behavioral neuroendocrinology

Neurobiology and Behavior is concerned with the biology of the nervous system and behavior. The Department of Neurobiology and Behavior emphasizes the adaptive aspects of neural and behavioral plasticity. The faculty's research interests include the biochemical, endocrinological, genetic, and experiential determinants of nervous system function and behavior. Focal topics include synaptic processes, neurophysiology, neuroendocrinology, neuroanatomy, molecular neurobiology, neuropharmacology, theoretical neurobiology, arousal and attention, learning and memory, reproductive behavior, and communication. The importance of developmental and comparative approaches to these problems is stressed.

The Department of Neurobiology and Behavior offers graduate training leading to the Ph.D. in Biological Sciences. Graduate students must complete a sequence of core courses (lectures and laboratories) during their first and second years, and maintain an overall GPA of 3.3 or better. They also must take a minimum of four advanced courses before graduation and participate in directed research each year and teaching during the first four years. 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 six years of study.

Ideally, applicants for this program should have taken undergraduate courses in biology (one introductory year plus some advanced work), psychology (experimental, physiological, and learning), chemistry through biochemistry, introductory physics, calculus, and statistics. They also must submit GRE Aptitude test scores. Because graduate training emphasizes research, preference is given to applicants having laboratory research experience as undergraduates. The Department accepts only those students seeking a doctorate; students who do not successfully complete their course work or who do not advance to candidacy may, with the consent of the faculty, complete a master's thesis and receive an M.S. degree in Biological Sciences. Applicants with substantial outside commitments that would curtail laboratory research or prolong the time to degree are not accepted. Students are encouraged to take the GRE no later than October. The deadline for application is January 7.

Courses in Neurobiology and Behavior

200A-B-C Research in Neurobiology and Behavior (2 to 12 per quarter) F, W, S. Individual research supervised by a specific professor. Prerequisite: consent of instructor.

201A-B-C Research in Neurobiology and Behavior (2 to 12 per quarter) F, W, S. Individual research supervised by a specific professor. Prerequisite: consent of instructor.

210 Learning and Memory (1 to 4). Lecture, four and one-half hours. A survey of the biological basis for learning and memory. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor. May be repeated for credit twice.

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: Neurobiology and Behavior or Anatomy and Neurobiology 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: Neurobiology and Behavior 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: Neurobiology and Behavior 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: Neurobiology and Behavior 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: Neurobiology and Behavior or Anatomy and Neurobiology graduate student or consent of instructor. May be taken for credit twice. Same as Anatomy and Neurobiology 224.

239 Functional Imaging of the Nervous System (4). Lecture and seminar, three hours. Overview of technical and applied aspects of imaging techniques available for studying the nervous system. The areas emphasized are cellular and subcellular imaging of neural function, systems-level imaging of brain function, and imaging of the human brain.

240 Advanced Analysis of Learning and Memory (4). Lecture and seminar, three hours. Advanced analysis of contemporary research concerning the nature and neurobiological bases of learning and memory. Special emphasis is given to time-dependent processes involved in memory storage. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

241 Advanced Analysis of Hormones and Behavior (4). Lecture and seminar, two hours. Advanced analysis of contemporary research on the sites and mechanisms through which hormones act to modify the brain and behavior developmentally and in adulthood. The focus is on steroid hormones and social behaviors, particularly those related to reproduction or communication. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

242 Development of Synaptic Functions (4). Lecture and seminar, two hours. Analysis of the ontogenetic development of synaptic functions in the brain and peripheral nervous system. Emphasis at the molecular and cellular levels. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

243 Advanced Analysis of Comparative and Developmental Neurobiology (4). 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. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

244 Biochemistry of Synaptic Plasticity (4). Lecture and seminar, three hours. Use of the primary literature to explore recent developments in the biochemistry of synaptic transmission that pertain to plasticity, memory, and learning, with a particular emphasis on the role of protein phosphorylation and related signal transduction pathways. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor. Same as Molecular Biology and Biochemistry 244.

245 Advanced Topics in the Neurobiology of Aging (4). Lecture and seminar, three hours. Covers the major topics and rapidly advancing areas in the molecular and cellular events leading to brain aging and dementia. Lectures are presented by investigators active in the fields of aging and neurodegeneration. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

246 Advanced Analysis of Attention and Learning (4). 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.

248 Topics in Neurobiology and Behavior (4). Studies in selected areas of neurobiology and behavior. May be taken for credit three times.

249 Electronics for Biologists (4). Lecture, three hours; laboratory, four hours. Basic principles of electricity; properties and use of discrete components and integrated circuits; circuit analysis and design. Intended for advanced students in the life sciences. Same as Physiology and Biophysics 205.

250 Basal Ganglia and Movement Disorders (4). Lecture and seminar, three hours. Principles underlying the organization and functions of the basal ganglia and amygdala are considered. The circuitry, neurotransmitters, and influences on cortex and brainstem motor regions are discussed. Clinical disorders of the basal ganglia, including parkinsonism and ballism, are included. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

251 Clinical Neurology for Neuroscientists (4). Lecture and seminar, three hours. 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. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

252 Chemical Senses (4). Lecture and seminar, three hours. Advanced analysis of contemporary research on the organization and functioning of the olfactory, taste, vomeronasal, and trigeminal systems. The focus is on how chemosensory information is coded and used for behavioral responses. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

253 Mechanisms of Sensory Cortex Function (4). Lecture and seminar, three hours. Examination of sensory cortex functions, focusing on auditory cortex. Its cellular mechanisms are examined and compared to those of other sensory modalities and subcortical regions. Physiological approaches are emphasized, but anatomical, molecular, and behavioral approaches are also considered. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

254 Molecular Neurobiology (4). Lecture and seminar, three hours. The application of genetic and recombinant DNA technology to neurobiology. Topics include the study of neuronal proteins which play important roles in the formation of synapses and synaptic transmission. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

255 History of Neuroscience (4). An overview of the conceptual and technical foundations of contemporary neuroscience from ancient times to the present. The subjects include synapses, neurons, brain organization, sensory, motor and regulatory systems, learning and memory, human brain function and dysfunction. Concurrent with Biological Sciences 119. May be taken twice for credit.

256 Seminar in Excitotoxicity and Neuronal Injury (4). Lecture and seminar, three hours. A review of recent theories concerning mechanisms of neuronal death in brain diseases. Focuses on recent breakthroughs and controversies in the field, with a special emphasis on the role of the excitatory neurotransmitter, glutamate. Same as Anatomy and Neurobiology 225.

257 Advanced Topics in Dementia (4). Lecture and 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. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

258 Advanced Analysis of Neurogenetics (4). Lecture and seminar, three hours. Analysis of the genetic basis of neurological development and disorders. Emphasis on the approaches used to identify novel, neurologically relevant genes and analysis on the molecular level. Focuses on understanding how genetic changes alter cellular functions and the clinical consequences that ensue. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

259 Cortical Plasticity (4). Lecture and seminar, three hours. Consideration of 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: Neurobiology and Behavior graduate student or consent of instructor.

NOTE: Seminar courses numbered 260–282 are open only to Neurobiology and Behavior graduate students and may be repeated as topics vary. 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

261 Seminar in Systems Dynamics (1.3) F, W, S

262 Seminar in Molecular Neurobiology (1.3) F, W, S

263 Seminar in Comparative and Developmental Neurology (1.3) F, W, S

264 Seminar in Neurochemistry (1.3) F, W, S

265 Seminar on the Chemical Senses (1.3) F, W, S

266 Seminar in Attention and Learning (1.3) F, W, S

267 Seminar in Neural Systems (1.3) F, W, S

268 Calcium and Cell Signaling (1.3) F, W, S

269 Seminar in Neural Injury (1.3) F, W, S

270 Seminar in Neuromechanisms (1.3) F, W, S

271 Seminar in Auditory Neurophysiology (1.3) F, W, S

272 Seminar in Neurophysiology of Behavior (1.3) F, W, S

273 Seminar in Hormones and Behavior (1.3) F, W, S

274 Seminar in Central Trophic Factors and Plasticity (1.3) F, W, S

275 Seminar in Cellular and Molecular Neurobiology (1.3) F, W, S

276 Seminar in Molecular Neuroscience (1.3) F, W, S

277 Seminar in Neuroethology (1.3) F, W, S

278 Molecular Neuropathology (1.3) F, W, S

279 Seminar in Synaptic Function in Neocortex (1.3) F, W, S

281 Seminar in Vision and Attention (1.3) F, W, S

282 Seminar in Human Brain and Memory (1.3) F, W, S

290 Colloquium in Neurobiology and Behavior (1.3) F, W, S

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants. May be repeated for credit.

DEPARTMENT OF ANATOMY AND NEUROBIOLOGY

364 Medical Surge II; (949) 824-6050
E-mail: anatomy@uci.edu
World Wide Web: http://www.com.uci.edu/~anatomy/
Richard T. Robertson, **Department Chair**

Faculty

Tallie Z. Baram: Developmental neurobiology of seizures; CNS mechanisms of stress response
Xiaoning Bi: Cellular mechanisms of brain aging
Robert H. Blanks: Vestibular physiology and anatomy
Ralph A. Bradshaw: Growth factor action; signal transduction; protein processing
Anne L. 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; neurotropic factors
Roland A. Giolli: Experimental neuroanatomy; visual system
Herbert P. Killackey: Developmental neuroanatomy; somatosensory system
Leonard M. Kitzes: Auditory system physiology and development
Frances M. Leslie: Effects of drugs of abuse on central nervous system development
W. Ian Lipkin: Molecular/cellular biology of neurotropic viruses; Borna disease virus; animal models for neuropsychiatric diseases
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
Oswald Steward: Mechanisms of recovery from CSN injury
John E. Swett (Emeritus): Peripheral nervous system, spinal cord, pain mechanisms
Ji Sze: Molecular neurobiology; gene expression in *C. Elegans*
John H. Weiss: Mechanisms of neural degeneration

Research programs in the Department of Anatomy and Neurobiology focus on the neurosciences. Faculty interests range across the broad field of neuroscience research, including cellular and molecular neurobiology, mechanisms of development, ion channel physiology, experimental neuroanatomy, structure and function of sensory and motor systems, and response to injury and regeneration. The Department maintains facilities for electron microscopy, laser confocal microscopy, and computer-based imaging and informatics. Students performing graduate work in the Department are encouraged to become proficient in multiple areas of neuroscience using interdisciplinary techniques.

The Department offers graduate training in neuroscience under the auspices of the School of Biological Sciences in the Neurobiology track of the combined program in Molecular Biology, Genetics, and Biochemistry (MBG&B). The program leads to the Ph.D. degree in Biological Sciences. In concert with several other departments, a combined neuroscience core curriculum has been developed which includes course offerings in systems neurobiology, neurophysiology, and cellular, molecular, and developmental neurobiology. These courses may be taken as complete or partial fulfillment of the elective requirements of the MBG&B program. Students wishing to enter the Department's graduate program are encouraged to include some or all of these courses during their first and second years in the combined program.

Students admitted into the MBG&B program who subsequently select a focus in the Neurobiology track and 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 departmental seminars and participate in the Department's Journal Club. The dissertation research topic is chosen by the student in consultation with the research advisor. The majority of the third and fourth years are devoted to research. By the end of the third year, students take their advancement-to-candidacy examination by presenting and defending a proposal for specific dissertation research. Students are expected to graduate within five years of entering the program.

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, W, S. Lecture, three hours; laboratory, nine hours. Study and dissection of the human body, including muscular, skeletal, nervous, and cardiovascular systems. Emphasis on both normal and abnormal structure and function. Prerequisites: graduate standing, consent of instructor.

202B Human Neuroscience (4) S. Lecture, three hours; discussion, one hour; laboratory, one hour. Study of the human nervous system at the systems level including the physiology and anatomy of sensory, motor, and integrative functions. Prerequisite: Anatomy 202A and consent of Department.

203A-B Human Microscopic Anatomy (3-3) 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.

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.

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.

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 Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice for a total of 16 units. Same as Neurobiology and Behavior 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 Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice. Same as Neurobiology and Behavior 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 Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice. Same as Neurobiology and Behavior 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 Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice. Same as Neurobiology and Behavior 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 Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice. Same as Neurobiology and Behavior 224.

225 Seminar in Excitotoxicity and Neuronal Injury (4) S. A review of recent theories concerning mechanisms of neuronal death in brain diseases. Focuses on recent breakthroughs and controversies in the field, with a special emphasis on the role of the excitatory neurotransmitter, glutamate. Same as Neurobiology and Behavior 256.

DEPARTMENT OF BIOLOGICAL CHEMISTRY

Building D, Room 240, Medical Sciences I; (949) 824-6051
Suzanne B. Sandmeyer, **Department Chair**

Faculty

Stuart M. Arfin: Gene regulation in *E. coli*
Pierre Baldi: Computation biology, bioinformatics, probabilistic modeling, machine learning
William Byerley: Genetics of schizophrenia
Xing Dai: Role of regulatory OVO proteins in mouse epidermal and reproductive differentiation
Deborah L. Grady: Mapping and sequence analysis of the human genome
Chris L. Greer: RNA processing and nuclear export; tRNA gene expression
Harry T. Haigler: Structure, function, and topography of annexin calcium binding proteins on membranes
Jack W. Jacobs: Cloning, expression, and characterization of leech anticoagulant proteins
Murray Korc: Molecular biology of altered signaling pathways in cancer
John Krolewski: Signal transduction and cellular growth control
Haoping Liu: Signal transduction, cell cycle regulation, hypha development in yeast
Calvin S. McLaughlin: Functional genomic analysis
Frank Meyskens: Biology of melanoma and chemoprevention of human cancer
Robert K. Moyzis: Human genome and complex genetic disease
Masayasu Nomura: RNA polymerase I; nucleolus and ribosome synthesis; nuclear structure and function
Suzanne B. Sandmeyer: Retrovirus-like elements in yeast; genomewide gene expression during stress
Moyra Smith: Development and tissue-specific changes in gene expression; human gene mapping
Robert E. Steele: Evolution of intercellular signaling in multicellular animals
Leslie M. Thompson: Molecular/biochemical analysis of skeletal dysplasias and Huntington's disease
Larry E. Vickery: Molecular chaperones and protein folding; assembly of Fels proteins

Ping H. Wang: Molecular actions of Insulin-like growth factor I (IGFI) in cardiac muscle; complications of diabetes
Kyoko Yokomori: Molecular mechanisms of chromosome dynamics and gene regulation

Faculty research interests in the Department of Biological Chemistry focus on the structure and function of chromosomes, signal transduction and its role in cell growth control, regulation of gene expression (transcription, RNA splicing, protein synthesis, and protein localization), and the molecular basis of development. Genome sequencing projects are making it possible for faculty to exploit information learned about gene function in model organisms for understanding human disease processes. Students are exposed to technical expertise in all facets of current research in molecular biochemistry from protein chemistry to genetic engineering and gene mapping. Currently, researchers in the Department are using new DNA array technology to examine changes in gene expression in response to the environment.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in 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 thesis research in the second year. Students are required to attend and participate in the departmental research seminar 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.

Courses in Biological Chemistry

200A, B, C Research in Biological Chemistry (2 to 12) F, W, S. Individual research under the supervision of a professor. Satisfactory/Unsatisfactory only. May be repeated for credit.

202A, B, C Laboratory Seminar Series (1, 1, 1) F, W, S. Study within a laboratory group including research and journal presentations. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

204 Problems in Genomic Analysis (1) F, W, S. Students from the biological and computational disciplines plan and execute genomewide gene expression studies and develop algorithms to identify biological motifs involved in gene regulation. The long-term goal of these studies is to develop predictive models for cellular function. Prerequisite: consent of instructor. May be taken for credit six times.

207 Advanced Molecular Genetics (4) F, W, S. Lecture, three hours. Introduction to genetic analysis using model organisms such as yeast. Topics include meiosis, DNA repair, cell cycle, cytoskeleton, intracellular sorting (nuclear, endoplasmic, mitochondrial), signaling, prions, and genomewide gene expression analysis. Prerequisites: Molecular Biology and Biochemistry 203. May be taken for credit six times. Same as Molecular Biology and Biochemistry 207.

210A Biochemistry and Cell Biology (12) F. Lectures and seminars. Biological chemistry and cell biology for first-year medical and graduate students. Presents the metabolism and molecular biology relevant to human health and disease that form the foundation of medical science for the next century. Prerequisite: consent of instructor.

212 Signal Transduction and Growth Control (4) S. Covers various eukaryotic signaling pathways (tyrosine kinase, ras-raf-MAPK, TGFB, wnt, JAK-STAT, and FAS) with an emphasis on the experimental underpinning. The material is covered in lectures and discussions of pertinent papers. Prerequisite: consent of instructor.

218 Human Molecular Genetics (4). Topics of current interest in human molecular genetics, with emphasis on an understanding of the methods and results generated by the Human Genome Project (HGP) and associated disease gene discoveries. Prerequisite: graduate standing or consent of instructor.

285 Redox Transcriptional Factors in Health and Disease (2). Transcription factors such as NFKB and AP families are in part controlled by cellular redox status. Such signals affect viral, inflammatory, immunological, and malignant responses. Consists of a few background lectures followed by student presentations. Prerequisite: consent of instructor.

291 Topics in Gene Regulation (2) F, W, S. Seminar, two hours.

Additional courses are taught by and with faculty from the Department of Molecular Biology and Biochemistry. Topics in advanced graduate courses offered by the Department include human genetics, growth factors and oncogenes, yeast molecular genetics, and protein/nucleic acid interactions.

DEPARTMENT OF MICROBIOLOGY AND MOLECULAR GENETICS

Building B, Room 240, Medical Sciences I; (949) 824-5261
Bert L. Semler, **Department Chair**

Faculty

Alan G. Barbour: Microbial pathogenesis
Vincent J. Caiozzo: Sarcomeric gene expression; contractile function; skeletal muscle plasticity
Dennis D. Cunningham: Proteases and protease nexins: regulation of neural cells
Xing Dai: Role of regulatory OVO proteins in mouse epidermal and reproductive differentiation
Mark Fisher: Mechanisms of occurence and prevention of cerebral vascular stroke
Alan L. Goldin: Molecular analysis of ion channels and their roles in human diseases
George A. Gutman: Potassium channel and immunoglobulin super-family genes
G. Wesley Hatfield: Effects of DNA topology on gene expression
Klemens J. Hertel: Regulation of gene expression by alternative splicing
W. Ian Lipkin: Molecular/cellular biology of Borna disease virus; animal models for neuropsychiatric diseases; application of subtractive cloning methods to studies in neuropathogenesis
W. Edward Robinson: Molecular pathogenesis of lentivirus infection and drug discovery against HIV
Hamid M. Said: Cellular and molecular aspects of intestinal and renal vitamin transporters
Rozanne M. Sandri-Goldin: Regulatory functions of a post-transcriptionally acting herpes virus protein
Michael E. Selsted: Innate immunity mediated by 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
Ming Tan: Bacterial pathogenesis; gene regulation in chlamydia
Bruce Tromberg: Optical spectroscopy in cells and tissues
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 (MBG&B), which is described in a previous section. Students admitted into the MBG&B program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year.

Participation in the Department's seminar series and completion of at least one advanced topics course per year for three years are expected of all students. In their third year, students take the advancement-to-candidacy examination for the Ph.D. degree by

presenting and defending 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 Medicine. Biochemical and genetic properties of infectious agents, identification and behavior of pathogens, activities of toxins, chemotherapy, biochemical genetics of drug resistance, humoral and cell-mediated immunity, introduction to diagnosis, treatment, and epidemiology of infectious diseases. Prerequisites: prior course work in microbiology and biochemistry and consent of instructor.

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 haematopoietic 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.

222 Molecular Pathogenesis of Viral Infections (4) S. Features lectures by faculty on the molecular aspects of viral pathogensis, highlighting both viral and cellular functions. Students give oral presentations and write a research proposal on a selected topic. Prerequisite: Microbiology and Molecular Genetics 205.

240 M.D./Ph.D. Tutorial (1) F, W, S. Explores a variety of topics that impact careers of medical scientists (M.D./Ph.D students). Topics range from scientific, such as recent advances in particular research areas, to ethical problems brought on by increased technology and intervention in the disease process. May be repeated for credit.

250 Responsible Conduct of Research (2). Each session includes a formal presentation by faculty/invited speaker followed by a discussion of case studies related to the topic under consideration. Satisfactory/Unsatisfactory only. Formerly Molecular Biology and Biochemistry 219.

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; (949) 824-5863
Janos K. Lanyi, **Department Chair**

Faculty

Nancy L. Allbritton: Signal transduction by second messengers and protein kinases
Kenneth M. Baldwin: Developmental, hormonal, and exercise factors regulating striated muscle gene expression
Michael E. Barish: Astrogial modulation of the differentiation of voltage-gated potassium currents; mechanisms of intracellular Ca^{2+} release
Ralph A. Bradshaw: Structure and function of polypeptide growth factors and their receptors; mechanisms of protein turnover
Michael D. Cahalan: Ion channels and Ca^{2+} signaling in the immune system
Vincent J. Caiozzo: Cellular and molecular mechanisms regulating the mechanical properties of skeletal muscle
K. George Chandy: Molecular biology of ion channels and their role in immune cells
J. Jay Gargus: Molecular analysis of membrane signaling proteins
Alan L. Goldin: Molecular biology of neural channels and receptors
George A. Gutman: Molecular and evolutionary studies of immunoglobulin and ion channel genes
Harry T. Haigler: Structure, function, and topography of annexin calcium binding proteins on membranes
James E. Hall: Biophysics of membrane channels, gap junctions and water channels
Frances A. Jurnak: Macromolecular crystallography; biochemical and structural studies of a model G protein; EF-Tu; structure/function of plant virulence factors
Janos K. Lanyi: Transport and energy coupling in the membrane of *Halobacterium salinarium*
Shin Lin: Cellular and molecular biophysics of proteins involved in membrane-associated cytoskeletal functions and signal transduction
Kenneth J. Longmuir: Intracellular metabolism, sorting, and transport of lipid in mammalian cells; membrane fusion
Hartmut Luecke: Protein crystallography; structure and function of membrane-associated proteins
Alexander McPherson: X-ray diffraction analyses of enzymes, viruses; antibodies and protein-nucleic acid complexes; crystallization methods; microgravity crystallization
Paul A. Negulescu: Physical requirements for T-cell activation; G-protein coupled receptor activation linked to β-lactamase expression
Thomas L. Poulos: Protein crystallography; protein engineering; heme enzyme structure and function
Hamid M. Said: Cellular and molecular mechanisms and regulation of intestinal and renal vitamin transporters
Ivan Soltesz: Plasticity and modulation of inhibitory synaptic neurotransmission
Bruce J. Tromberg: Optical spectroscopy of tissues and cells
Larry E. Vickery: Molecular chaperones and protein folding; protein engineering
Stephen H. White: Protein folding in membranes; peptide-bilayer interactions; membrane structure

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.

203 Review of the Literature of Physiology and Biophysics (2) F, W, S. Students review papers in the current literature and present ideas contained therein to other students and faculty. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. 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. *Offered only if sufficient demand exists.*

205 Electronics for Biologists (4) W. Lecture, three hours; laboratory four hours. Basic principles of electricity; properties and use of discrete components and integrated circuits; circuit analysis and design. Intended for advanced students in the life sciences. Same as Neurobiology and Behavior 249.

206A-B Introduction to Medical Physiology (5-6) W, S. Lecture, six hours; discussion, two hours; other, two hours. Vertebrate physiology with emphasis on humans and on the relationship between the function of normal tissues and the processes of disease. Fundamental principles of physiology and the interrelationships which control organ function. 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 CBE209.

210 Molecular Pathophysiology (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.

211 Protein Crystallography (3) S of even years. Lecture, three hours. Introduces students to the theory and practice of macromolecular crystallography. Covers all aspects, including protein crystallization, space groups, phasing methods, electron density map interpretation, refinement and preparation of results for publication. Corequisite: calculus. Prerequisite: consent of instructor. Same as Molecular Biology and Biochemistry 254.

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, two hours; discussion, two hours. An introductory course on the roles ion channels play in important cellular processes such as nerve conduction, synaptic transmission, cell signaling, gene regulation, and cell-cell communication. Demonstrations include patch clamp recording, reconstitution of channels in lipid bilayers, and analysis of single channel properties. Intended for students interested in cell biology, protein structure, and neurophysiology. Prerequisite: consent of instructor. *Offered only if sufficient demand exists.*

242 Protein Engineering (3) W of even years. 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 CBE242.

261 Protein Stability and Structure (3) S of even years. 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.

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

Louis F. Mirón, **Chair**

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Faculty

Robert J. Beck, Ph.D. University of Chicago, *Director of the Center for Collaborative Research in Education (CCRE) and Assistant Professor of Education* (educational discourse processes, early childhood learning, multimedia instruction)

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, *Director, Ed.D. Program, and Senior Lecturer* (learning theory, research and evaluation, educational policy)

Liane Brouillette, Ph.D. University of Colorado, Boulder, *Assistant Professor of Education* (educational leadership, qualitative research, arts in education)

Kimberly Burge, Ed.D. University of California, Irvine, *Lecturer* (applied technology, art education)

Stephen R. Campbell, Ph.D. Simon Fraser University, *Assistant Professor of Education* (mathematics education, philosophy of education)

Suzanne Charlton, Ph.D. Claremont Graduate School, *Lecturer* (multicultural education, CLAD/BCLAD)

Linda Clinard, Ph.D. University of Michigan, *Lecturer* (reading education, curriculum and instruction)

Dennis Evans, Ed.D. University of Southern California, *Director of the Credential Programs of the Department of Education, and Academic Coordinator* (educational administration, secondary education)

Gilbert Gonzalez, Ph.D. University of California, Los Angeles, *Professor of Social Sciences and Education*

Alan R. Hoffer, Ph.D. University of Michigan, *Professor Emeritus of Education*

Michael E. Martinez, Ph.D. Stanford University, *Associate Professor of Education* (psychology of learning, intelligence, assessment)

Jack McCullough, Ph.D. United States International University, *Lecturer Emeritus*

Susan M. Meyers, M.S. University of Wisconsin, *Supervisor of Teacher Education* (elementary education)

Louis F. Mirón, Ph.D. Tulane University, *Chair of the Department of Education and Associate Professor of Education and Social Sciences* (social theory, postmodernism, urban education)

Carol Booth Olson, Ph.D. University of California, Los Angeles, *Senior Lecturer and Academic Coordinator* (UCI Writing Project, language arts education)

Rita W. Peterson, Ph.D. University of California, Berkeley, *Senior Lecturer* (science education, special-needs education)

Timothy M. Tift, M.A. Pepperdine University, *Lecturer* (health, physical education, undergraduate minor in Educational Studies)

Rodolfo D. Torres, Ph.D. Claremont Graduate University, *Associate Professor of Education* (political economy, urban education, social policy)

Lecturers

Bruce Baron, M.S. Pepperdine University, *Lecturer* (social science education)

Donna Bennett, M.A. Pepperdine University, *Lecturer* (social science education)

Brooke Booth, Ed.D. Pepperdine University, *Lecturer* (professional administration)

Judith Conroy, M.A. University of California, Irvine, *Academic Coordinator* (secondary education)

Julia Hume, Ed.D. University of La Verne, *Lecturer* (professional administration, social science)

Thomas W. Jacobson, Ed.D. University of Southern California, *Lecturer* (professional administration, school finance)

Jon Johnson, B.A. Pepperdine University, *Lecturer* (science education)

Jeanne Stone, M.A. California State University, Long Beach, *Lecturer* (language arts and mathematics education)

Kathleen Strickland, M.A. California State University, Fullerton, *Lecturer* (curriculum development, teacher training)

Carol Tipper, B.A. University of California, Irvine, *Lecturer* (mathematics education)

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, a minor in Educational Studies, an M.A. degree in Educational Technology Leadership, and an 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 teacher and school administrator professional preparation 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 Multiple Subject Credential and the Single Subject Credential. There are two paths available to obtain each of these teaching credentials: the Intern Teacher Credential Program and the Student Teacher Credential Program. Additionally, the Department offers Administrative Services Credential programs.

MULTIPLE SUBJECT TEACHING CREDENTIAL

A Multiple Subject Teaching Credential authorizes teaching multiple subjects, as commonly practiced in California elementary schools.

A Preliminary Multiple Subject Teaching Credential is awarded by the State upon completion of a baccalaureate degree and the State-approved UCI teacher education program which includes student or intern teaching. Students must also complete a college-level course or pass an examination on the U.S. Constitution, pass the California Basic Educational Skills Test (CBEST), and verify subject-matter competence. In addition, candidates for a Multiple Subject Credential are required to pass the Reading Instruction Competence Assessment (RICA). This test may be taken during or immediately following completion of the teacher education program.

To prove subject matter competence, multiple subject candidates must pass the Praxis II: Multiple Subject Assessment for Teachers (MSAT) or complete a California Commission on Teacher Credentialing (CCTC)-approved subject-matter program. (UCI does not have a subject-matter program for multiple subjects but will honor approved programs from other universities.) The MSAT consists of two sections: Content Knowledge and Content Area Exercises. Students are tested in the following areas: English, mathematics, science, social science, physical education, human development, and visual and performing arts. All multiple subject students must pass both sections of the MSAT or complete at least four-fifths of an

approved subject-matter program prior to student or intern teaching. Completion of the entire subject-matter program or passage of the MSAT is required for the credential.

SINGLE SUBJECT TEACHING CREDENTIAL

A Single Subject Credential authorizes teaching in a specific subject area, as is commonly practiced in California high schools and middle/intermediate schools. UCI offers Single Subject Teaching Credentials in art, English, languages other than English, mathematics, music, sciences, and social science.

A Preliminary Single Subject Teaching Credential is awarded by the California Commission on Teacher Credentialing (CCTC) upon completion of a baccalaureate degree and the State-approved UCI teacher education program which includes student or intern teaching. Students must also complete a college-level course or pass an examination on the U.S. Constitution, pass the California Basic Educational Skills Test (CBEST), and verify subject-matter competence.

California requires all credential candidates to demonstrate subject-matter competence. Single subject candidates achieve this by passing the appropriate Praxis II subject assessments and the Single Subject Assessment for Teaching (SSAT) specialty area tests or by completing a CCTC-approved subject-matter program in the teaching area. UCI offers CCTC-approved subject-matter programs in English, social science, and Latin. Consult an academic counselor in the Department of Education for more detailed information.

Students pursuing a subject-matter program may do student or intern teaching with a minimum of four-fifths of the subject-matter program completed. However, the entire subject-matter program must be completed for the credential. Single subject candidates who verify subject-matter competence by examination must pass all parts of either the Praxis II or the SSAT in order to do student or intern teaching. All required tests must be passed before students can be credentialed. Students should consult an academic counselor in the Department of Education for more detailed information.

INTERN TEACHER 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 a school district. To serve as an intern, the student must be admitted to the Department of Education Intern Teacher Program and be eligible for an Intern Credential. Eligibility requirements for an Intern Credential include: a baccalaureate degree, current tuberculin test clearance, Certificate of Clearance, passage of the CBEST, verification of subject-matter competence, and passage of a course or college-level examination on the U.S. Constitution. 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 teacher education program.

Interns are required to take the following courses.

Multiple Subject Interns: Education 106A, 111A, B, C, D, 173†, 183, 184A, 301A, 301LA, 310A–I.

Sample Fifth-Year Program—Multiple Subject Intern Teachers

SPRING	SUMMER	
Ed. 106A	Ed. 111A, B, C	
Ed. 111D	Ed. 301A, LA	
Ed. 183		
Ed. 184A		
FALL	**WINTER**	**SPRING**
Ed. 310A, B, C	Ed. 310D, E, F	Ed. 310G, H, I

Single Subject Interns: Education 101, 102A–G (students enroll in the section of their proposed credential authorization), 102H, 106A, 173†, 180, 184A, 302A, 302LA, 330A-I.

Sample Fifth-Year Program—Single Subject Intern Teachers

SPRING	FALL	WINTER	SPRING
Ed. 106A	Ed. 101	Ed. 102H	Ed. 102H
Ed. 180	Ed. 102*	Ed. 330D, E, F	Ed. 330G, H, I
Ed. 184A	Ed. 330A, B, C		
Ed. 302A, LA			

A grade of B or better is required in all courses and in intern teaching for successful completion of the program. If competence has been demonstrated by the conclusion of the intern teaching program and all other requirements are met, the student is eligible for a credential recommendation by UCI.

For further information see an academic counselor or the intern program coordinator in the Department of Education.

† Education 173 is a prerequisite for the Intern Teacher Credential Program and must be successfully completed prior to beginning the program. Education 176 may substitute for Education 173.

* Section is dependent upon content area.

STUDENT TEACHER PROGRAM WITH CLAD OR BCLAD (SPANISH) EMPHASIS

Students earning a Multiple Subject or a Single Subject credential through UCI's student teacher program will also meet the requirements for the CLAD emphasis. Students who are bilingual in Spanish (as ascertained through testing) may be eligible for the BCLAD credential. Students should consult an academic counselor in the Department of Education for more detailed information.

Candidates who enroll in the Multiple Subject Student Teacher Credential program at UCI generally are required to take the following courses: Education 104A, 105A, 110A, B, C, D, 124‡, 173‡, 174, 300A-B-C-D-E, 301A, 301LA.

Sample Fifth Year—Multiple Subject Student Teachers

FALL	WINTER	SPRING
Ed. 105A	Ed. 104A	Ed. 105A
Ed. 110A, B, C, D	Ed. 105A	Ed. 110A, B, C, D
Ed. 165§	Ed. 110A, B, C, D	Ed. 300C, D, E
Ed. 166§	Ed. 167§	
Ed. 174	Ed. 300A, B	
Ed. 301A, LA		

Candidates who enroll in the Single Subject Student Teacher 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, 124‡, 165§, 166§, 167§, 173‡, 174, 302A, 302LA, 320A-B-C-D-E.

Sample Fifth Year—Single Subject Student Teachers

FALL	WINTER	SPRING
Ed. 101	Ed. 102H	Ed. 102H
Ed. 102*	Ed. 167§	Ed. 320C, D, E
Ed. 105B	Ed. 302A, LA	
Ed. 165§	Ed. 320A, B	
Ed. 166§		
Ed. 174		

* Section is dependent upon content area.

‡ Education 124 and Education 173 are prerequisites for the Student Teacher Credential Program and both must be successfully completed prior to beginning the program. Education 160/160L may substitute for Education 124. Education 176 may substitute for Education 173.

§ Education 165, 166, and 167 are required CLAD/BCLAD emphasis courses.

Student teaching for Multiple Subject candidates (grades K–6) 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 of student teaching. Assignments will include two levels within the K–6 range.

Student teaching for Single Subject candidates (grades 7–12) is defined as a full-day, five-day-per-week assignment, for one full public school semester in an appropriate classroom setting.

Clearances for student teaching are processed by the Department of Education and are contingent upon a 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 in student teaching for successful completion of the program. If competence has been demonstrated by the conclusion of the student teaching program and all other requirements are met, the student is eligible for a credential recommendation by UCI.

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 specific college-level course work to qualify for a supplementary authorization to teach in areas other than the major teaching area. Consult an academic counselor in the Department of Education for details.
2. Students may pass the appropriate examinations in any area of their choice and successfully complete specified additional course work. They will then qualify for the additional teaching authorization in that subject.

PROFESSIONAL CLEAR TEACHING CREDENTIAL

The Professional Clear Teaching Credential is awarded by the California Commission on Teacher Credentialing upon completion of the fifth year of study, which is defined as 45 quarter units of upper-division or graduate-level postbaccalaureate courses.

State-approved courses in computer education (Education 301A, 301LA or 302A, 302LA), special education (Education 162), and health education (Education 380) are also required for the Professional Clear Credential. Postbaccalaureate courses taken as part of UCI's teacher education program can be used to satisfy fifth-year requirements.

Preparation for Applying to the Credential Programs

Eligibility for admission is supported by passing the CBEST, providing evidence of possession of/application for a Certificate of Clearance, and successfully completing the appropriate subject area examinations or an approved subject-matter program.

Registration for examinations must be made well in advance of test dates. Students are urged to contact the Department of Education for information about the tests and test dates at least one year before credential program application deadlines.

The Department of Education requires appropriate field experiences prior to entering the program. Course credit for field experience is available through Education 100, 103, and 160/160L, 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 active participation in the Teachers of Tomorrow Club.

An application is enhanced if prerequisite courses (Education 173 for the intern teacher credential programs and both Education 124 and 173 for the student teacher credential programs) have been completed. Education 176 may be substituted for Education 173, and Education 160/160L may be substituted for Education 124. Education 124 and 173 are also offered online for students not matriculated at UCI.

Admission to the Credential Programs

Information and applications are available from the Department of Education, 2001 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 academic work. For applicants to the teaching credential programs, at least one letter should focus on experiences related to teaching.

CBEST. Evidence of having passed the California Basic Educational Skills Test must 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 California Commission on Teacher Credentialing (CCTC). Applicants must provide evidence of filing for this Certificate along with their application for admission to the Department of Education. Contact an academic counselor in the Department of Education for advice on how to handle this process.

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 programs leading to the Administrative Services Credential generally required for school administrators.

There are two tiers of the Administrative Services Credential. In the first tier, a candidate obtains the Preliminary Administrative Services Credential by completing the approved program of 36 quarter units and a comprehensive examination. This credential also requires a valid basic credential, three years of full-time teaching or services experience, and passage of the CBEST.

After an administrative position is obtained, the individual must begin the Professional Clear Administrative Services Credential (tier two) program. The UCI Professional Clear program requires the completion of an additional 38 quarter units (120 hours of non-University work or other structured programs may substitute for 12 of these units) and two years of successful full-time school administrative experience in a position which requires the Preliminary Administrative Services Credential. Some courses in the Professional Clear Administrative Services program are applicable to the Ed.D. degree in Educational Administration at UCI.

Students interested in these credentials should make an appointment with an academic counselor in the Department of Education.

Undergraduate Minor in Educational Studies

The minor in Educational Studies allows students to explore a broad range of issues in the field of education, and provides a strong foundation for K–12 teaching. The program consists of a coordinated set of courses which includes an introductory level course and several advanced courses in the field of education. A number of the minor's elective courses are offered by other academic units.

Students who plan to apply for admission to a credential program in the UCI Department of Education (or at other institutions) will enhance their admissibility through taking the minor's coordinated set of courses and will acquire a strong basic foundation for their advanced work. Students who do not eventually choose education as a career path will have gained a valuable knowledge base applicable to many other occupations and to roles as citizens, parents, and volunteers.

Requirements

The minor requires completion of a minimum of seven courses (at least five of which must be upper-division) totaling 28 units drawn from the four required areas of study shown below and from the approved electives. No more than two courses from the student's major area of study may be used for completion of the minor.

Area 1. Educational systems, issues, and reforms: Origins, Purposes, and Central Issues in K–12 Education (Education 50).

Area 2. Learning and the learning process: *either* Learning Theory and Classroom Practices (Education 173) *or* Psychology of Learning, Abilities, and Intelligence (Education 176). Each of these courses also fulfills a prerequisite requirement for the Department's fifth-year teacher credential programs.

Area 3. Educational contexts and influences: There are two requirements in Area 3: (1) a course that focuses on K–12 education/schooling and (2) fieldwork in K–12 schools. To satisfy the fieldwork requirement, students must be involved in at least 20 clock hours of verified observation and/or service in the schools.

Courses which include fieldwork are: Educational Strategies for Tutoring and Teacher Aiding (Education 100), Advanced Tutoring (Education 103), Multimedia and the Arts in the Multicultural Classroom (Education 104E), Multicultural Education in K–12 Schools (Education 124), Changing the High School Experience (Education 150), and Practicum in After-School Learning and Inquiry (Education 160, 160L).

Department of Education courses that meet the course requirement in this area but do not include fieldwork are: Children, Schools and Cinema (Education 125), Mainstreaming Special and General Education (Education 162*), Foundations of Education (Education 175), and Health Education for Teachers (Education 380*). Courses from other academic units, such as History of Chicano Education (Social Science 173H), may also be appropriate in this area. Taking one of these courses in combination with 20 clock hours of verified observation and/or service in the schools under the auspices of campus outreach programs or through independent observation or service in K–12 schools will fulfill both requirements in this area.

**Students who plan to complete a fifth-year teacher credentialing program should consult an academic counselor in the Department of Education (949-824-6673 or -7465) prior to enrolling in Education 162 or 380.*

Area 4. Subject-matter content and pedagogy: This area requires completion of one course focusing on an academic discipline of the student's choice which has direct applicability to K–12 instruction. A list of courses approved for Area 4 is available in the Department of Education.

NOTE: In addition to the approved courses shown, a variety of other courses may be appropriate for Areas 3 and 4. Students must have these additional courses pre-approved by the Department of Education Faculty Advisor. Only two courses may be chosen from the student's major area of study.

Electives. The remaining courses needed to complete the seven-course minor may be selected from any approved courses that are not used to meet an area requirement or from other courses deemed appropriate by the Faculty Advisor.

Residence Requirement for the Minor: At least four upper-division courses must be successfully completed at UCI.

Statement of Intent: A Statement of Intent is required of all students wishing to enroll in this minor; forms are available in the Department office, 2001 Berkeley Place.

Graduate Degree Programs

MASTER OF SCIENCE IN CHEMISTRY OR MATHEMATICS WITH A TEACHING CREDENTIAL

In cooperation with the Departments of Chemistry and Mathematics, the Department of Education offers coordinated programs 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.

MASTER OF ARTS IN EDUCATIONAL TECHNOLOGY LEADERSHIP

The Department of Education offers a program of part-time study leading to an M.A. degree in Educational Technology Leadership. This program is designed to address the need for technology-sophisticated leadership in California schools. Although many teachers have become expert at using computers and related technologies in their own classroom, the problems of scaling-up individual successes across whole schools and districts require new skills and perspectives. Helping to build that kind of leadership is the focus of the M.A. degree program.

The program course of study addresses two central themes: (1) the need for and nature of educational reforms and improvement and (2) the understanding needed to design, accomplish, and evaluate changes in instruction and school organization that take advantage of a range of electronic information and communications technologies. Because the program is not designed to prepare technical specialists, admitted students will be expected to already possess practical expertise in the use of educational applications of computers and related technologies.

Admission

Admission decisions are based upon application materials that provide evidence of scholarly potential and expertise in the instructional use of computers and/or video. These include the student's grade point average in previous academic course work, GRE scores, examples of previous technology-related work, brief written responses to several questions, and letters of recommendation.

Program of Study

The M.A. program in Educational Technology Leadership is a part-time program for working professionals. The 54 quarter units (14 courses) can be completed within two years, including summers. The curriculum consists of foundations (core) courses, which are also part of the Ed.D. program in Educational Administration, and a set of advanced courses in educational technology. The program begins in the summer.

Several courses follow a paired sequence, with the second course focusing exclusively on technology issues. For example, a course on cognition and acquisition of understanding is followed by a course in the design of technology-rich, cognitively oriented instruction; a course on professional and staff development is paired with one on building learning communities around technology; the study of schoolwide reform is followed by a course on using technology resources in reform; and a course on program evaluation precedes one on evaluating technology-based programs. Other courses include a first-year seminar, a computer laboratory experience focusing on research skills, and a scholarly treatment of issues in educational technology.

During the second year, there is a three-part comprehensive examination which includes (1) a written review of the literature on an educational technology topic chosen by the student; (2) a written proposal for the design, implementation, and evaluation of a technology plan for a school setting; and (3) an oral defense of the proposed technology plan. Students who successfully complete all course work and pass the three-part comprehensive examination will be granted an M.A. degree.

The M.A. in Educational Technology Leadership is linked closely with the Department's Ed.D. program in Educational Administration. The M.A. program is an alternative point of entry into the Ed.D., with the core courses in the master's program all included in the Ed.D. program. Master's degree students will be given credit for those courses if they are accepted into the Ed.D. program. Both programs are designed to prepare leaders who can implement school reform efforts for K–12 schools of the twenty-first century.

DOCTORAL DEGREE IN EDUCATIONAL ADMINISTRATION

The Department of Education, in cooperation with the Graduate School of Education and Information Studies at the University of California, Los Angeles, offers a program of part-time study 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 thus provides a broad base of knowledge applicable to K–12 school leadership. Emphasis also is placed 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

The program is designed for full-time employed professionals. Course work is covered in three academic years and four summers of study prior to the dissertation. Eighty-eight quarter units are required. Students enroll for no more than eight units per quarter during the academic year. All courses are required, except that a student may petition to take a substitute course at UCLA. Students admitted to the program are expected to take all courses on schedule.

First-Year Requirements

First-year courses. During the first year, the following courses covering fundamental issues in the study of educational leadership and school reform are required: First-Year Seminar (Education 259A); Issues in Educational Policy and Reform (Education 251); Organizational Theory, Planning, and Application (Education 271); Philosophy and Ethics of Educational Leadership (Education 272); Studies of Professional and Staff Development (Education 274B); Studies of School Finance and Political Economy (Education 276B); Studies of Diversity and Inequality in Education (Education 278B); Evaluation of Educational Programs (Education 281); Applications to Education of Social and Psychological Theories and Research Methods (Education 285B).

First-year comprehensive examination. At the end of the first year, a comprehensive examination evaluates student progress in acquiring the substantive knowledge and analytical skills which the program strives to impart. Students who do not pass the examination the first time are given one opportunity to retake it.

Second-Year Requirements

Second-year courses. Second-year study, which begins in the second summer, involves four courses that round out the study of fundamental issues in leadership and reform: History of School Reform and Central Themes of the Current School Reform Movements (Education 250); Information and Communication Technologies for Administrators (Education 270); School Restructuring and Resource Allocation (Education 277B); Student Assessment (Education 273A).

In the second summer, students begin UCLA course work and take a UCLA course in each of the subsequent summers.

The balance of second-year course work focuses on (a) understanding fundamental perspectives on knowledge and theory, and (b) developing competency in the use of research and evaluation tools. These courses include: Functional, Interpretive, and Critical Analyses of Schooling (Education 260) and Research Applied to Administrative Practice (Education 279).

In addition, students take a three-quarter directed field research experience: 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.

Third-Year Requirements

In the third year, students complete their study of research and evaluation tools with two courses: Applications to Education of Social and Psychological Theories and Research Methods (Education 285A) and Data Analysis in Education Research and Evaluation (Education 287). Students also spend the third year developing their dissertation proposals: Third-Year Seminar (Education 259B-C).

Oral Qualifying Examination. In the third year, students take an oral qualifying examination administered by a five-person Candidacy Committee. The examination consists of a review by the committee of the student's dissertation proposal and examination of the student's competence in areas specified in the proposal. Students who do not pass in the first attempt have one opportunity to retake the examination within three months.

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

Research and writing of the dissertation are undertaken in the fourth (and fifth, if necessary) year of the program. Students enroll in Dissertation Research (Education 299) once they begin their dissertation research. 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 on a part-time basis 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

50 Origins, Purposes, and Central Issues in K–12 Education (4) F. An introduction to the role of education in U.S. society and to central issues in K–12 education. Education is studied from four different perspectives: social, historical, philosophical, and political.

100 Educational Strategies for Tutoring and Teacher Aiding (4) F, W, S. Placement in a public elementary or secondary school to gain experience as a tutor or teacher aide. Emphasis on cognitive learning and the development of instructional strategies and resources which can be used in effective cross-age and cross-cultural experiences. Same as Engineering E197A.

101 Secondary School Curriculum (4) F. An introduction to the historical, philosophical, and legal antecedents of secondary school education. Emphasis on the contextual nature of schooling and how various influences and issues impact the school curriculum. National, state, and local standards regarding specific curricular areas are examined. Limited to students accepted into the Teacher Credential Program.

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. Limited to students accepted into the Teacher Credential Program.

102B Methods of 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. Limited to students accepted into the Teacher Credential Program.

102C Methods of 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 consistent with the California State Framework. Practice in the design of lesson plans that are both integrated and cumulative. Limited to students accepted into the Teacher Credential Program.

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. Limited to students accepted into the Teacher Credential Program.

102F Methods of Teaching Mathematics in Secondary School (4) F. Theories, strategies, and methodologies related to the teaching of mathematics in the secondary school. Emphasis on the planning, delivery, and assessment of lessons reflecting an understanding of the Mathematics Framework for California and the recommendations of professional organizations. Limited to students accepted into the Teacher Credential Program.

102G Methods of Teaching Science in Secondary School (4) F. Theories, strategies, and methodologies related to the teaching of science in the secondary school. Emphasis on the planning, delivery, and assessment of lessons reflecting an understanding of the Science Framework for California and the recommendations of professional organizations. Limited to students accepted into the Teacher Credential Program.

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. Limited to students accepted into the Teacher Credential Program.

103 Advanced Tutoring (4) S. Lectures/discussions and 40 hours public school experience provide advanced strategies for tutoring under-achieving pupils; guidance using case studies to examine a range of factors that contribute to public school failure among elementary, middle, and secondary pupils. Prerequisite: Education 100 or consent of instructor.

104A Teaching the Visual and Performing Arts and Physical Education in Elementary School (2) W. Issues and practice in integrating California curriculum frameworks topics in elementary visual and performing arts and physical education with an emphasis on multicultural and computer-based resources and teaching strategies in the elementary school. Limited to students accepted into the Teaching Credential Program. May be taken for credit twice.

104E Multimedia and the Arts in the Multicultural Classroom (4) S. Multiculturalism and underrepresented U.S. minorities and the visual and performing arts: perspectives in artistic perception, creative expression, historical and cultural context, and aesthetic valuing, and media literacy in the interpretation and production of multimedia arts products and applications for K–12 classrooms. Same as Studio Art 149. **(VII-A)**

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. Limited to students accepted into the Teacher Credential Program.

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. Limited to students accepted into the Teacher Credential Program.

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 Curriculum and Methods for Elementary School Social Studies (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. Limited to students accepted into the Teacher Credential Program.

110B Curriculum and Methods for Elementary School Mathematics (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. Limited to students accepted into the Teacher Credential Program.

110C Curriculum and Methods for Elementary School Science (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. Limited to students accepted into the Teacher Credential Program.

110D Curriculum and Methods for Elementary School Language Arts (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. Limited to students accepted into the Teacher Credential Program.

111A Curriculum and Methods for Elementary School Social Studies 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. Limited to students accepted into the Teacher Credential Program.

111B Curriculum and Methods for Elementary School Mathematics 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. Limited to students accepted into the Teacher Credential Program.

111C Curriculum and Methods for Elementary School Science 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. Limited to students accepted into the Teacher Credential Program.

111D Curriculum and Methods for Elementary School Language Arts 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. Limited to students accepted into the Teacher Credential Program.

114 Science Education Teacher Apprentice Field Experience (4). Students assist public school classroom teachers in laboratory demonstrations and experiments, tutoring individuals or small groups. May be taken for credit twice. Same as Physical Sciences 114.

122 Foundations of Elementary School Mathematics (4). Selected topics in the foundations of elementary school mathematics. This subject content course draws upon findings in the development of mathematical understanding from various disciplines, including contemporary research in mathematical education.

124 Multicultural Education in K–12 Schools (4). Analysis of educational needs and experiences of minority groups in the state and nation and related social, cultural, language, and economic issues. Examination of practices for fostering equity and for creating schools and classrooms that respond to the needs of diverse students. NOTE: This course is a prerequisite for the CLAD/BCLAD emphasis. **(VII-A)**

125 Children, Schools, and Cinema (4). Using popular films as the vehicle, essential aspects of school dynamics and the interaction of schools with students, teachers, and the public are analyzed. Melding educational studies and film studies provides a deeper understanding of the methods used to transmit information and attitudes about schools to the lay public.

130 Introduction to the History of Science for Prospective Teachers (4). A pedagogically oriented approach to case studies that illuminate the emergence of modern science since 1500 and the impact of science-based technology on society. Designed for students interested in teaching science. Education 130 and History 60 may not both be taken for credit.

132 Thinking Mathematically: Learning and Teaching Mathematics (4). The primary focus is on the psychological and historical development of mathematical thinking. Intended for prospective teachers and for all those with an interest in understanding mathematics and thinking mathematically.

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 10B or equivalent. 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. Requires field work. Emphasis placed on training differences for native versus nonnative Spanish speakers. Prerequisite: Spanish 10B or equivalent. Same as Spanish 106B.

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.

155 Special Topics in Educational Issues and Asian Americans (4). Critical analysis of a variety of historical and contemporary educational issues facing Asian Americans. May be repeated for credit as topics vary.

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. Corequisite: Education 160L. May be taken for credit three times. NOTE: This course can be substituted for Education 124 as a prerequisite for the CLAD/BCLAD emphasis. (with successful completion of Education 160L: **VII-A)**

160L Community Field Work (2) F, W, S. Community-based practicum. UCI students work with under-served children (ages 6–12) in after-school venues, assist with their literacy development through technology-based play and story-telling activities, and develop field notes including data from interviews with the children. Corequisite: Education 160. May be taken for credit three times.

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. Course meets State requirements for Professional Clear Teaching Credentials.

165 Theories and Research on First- and Second-Language Acquisition in School Contexts (4). Provides CLAD 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. Limited to students accepted into the Teacher Credential Program.

166 Methodology of Bilingual, English Language Development (ELD), and Specially Designed Academic Instruction in English (SDAIE) (4). 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. Limited to students accepted into the Teacher Credential Program.

167 Practicum in Cultural Studies and Field Experiences in Diverse School and Community Settings (4). Presents CLAD 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. Limited to students accepted into the Teacher Credential Program.

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, and motivation are applied to understanding children and adolescents of all cultural, linguistic, and socioeconomic backgrounds; formulation of teaching and learning strategies, including those using the Internet and World Wide Web; performance-based assessment; classroom management. Note: Prerequisite for teacher credential program and for 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. Limited to students accepted into the Teacher Credential Program.

175 Foundations of Education (4). Foundational questions of education are viewed from newly emerging developmental perspectives which treat cognition as embodied action and learning as cultural recapitulation. Historical, sociological, psychological, and philosophical implications of these views toward various aspects of teaching, learning, curriculum, and pedagogy are considered.

176 Psychology of Learning, Abilities, and Intelligence (4) S. Overview of classic positions on the mind, human abilities, and intelligence, especially as related to academic achievement. Contrasting views: psychometric versus information processing; experimental versus correlational research. Prerequisite: introductory course in psychology, or consent of instructor. This course may substitute for Education 173 as a prerequisite for 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. Limited to students accepted into the Teacher Credential Program.

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 field work experience for intern candidates in preparation for responsibilities assumed during internship year. Limited to students accepted into the Teacher Credential Program.

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.

199 Individual Study (1 to 4 per quarter) F, W, S, Summer. Intensified advanced study in areas in which a student has considerable background, under the direction of a faculty member who will guide and evaluate the study.

232 Graduate Seminar in Mathematical Cognition and Learning (4). Selected topics in the foundations of mathematical cognition. Draws upon results in the development of mathematical cognition from various disciplines such as history, psychology, phenomenology, neuroscience, and linguistics, and focuses on implications of these developments for mathematics education.

250 History of School Innovations and Current School Reform Movements (4). Offers an analysis of major school reform movements, both ongoing and those from the past century. Study of the underlying dynamics affecting the interrelationship between schools and society and the implications of these relationships. Limited to doctoral and/or Professional Administrative Services Credential students.

251 Issues in Educational Policy and Reform (4). An in-depth study of topics relevant to educational reform and policy-making. Topics include: the policy-making process, the role of values and interest groups, policy analysis, equality of educational opportunity, systemic reform, implementation, and politics at the school site. Open to doctoral students only.

259A First-Year Seminar (2 to 4). Graduate seminar for entering Ed.D. students. Employment of skills such as conducting literature reviews, types and styles of writing, use of the Internet. Also examines different issues related to educational research and methodologies. Open to doctoral students only.

259B-C Third-Year Seminar (2-2). Graduate seminar for third-year Ed.D. students; focus on designing and defending dissertation proposals. Includes faculty colloquia on various topics related to advanced research design and data analysis, educational theory, practice, and policy. Open to doctoral students only.

260 Functional, Interpretive, and Critical Analyses of Schooling (4). Understanding the processes of schooling from functional, interpretative, 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 students only.

270 New Information and Communication Technologies for Administrators (2 to 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. Limited to doctoral and/or Preliminary Administrative Services Credential students.

271 Organizational Theory, Planning, and Application (4) F. Basic theories, attributes, and functions of human organizations. Understanding and managing the dynamics of group behavior and human relations. Structuring and leading groups in a variety of organizational settings. Application of organizational theories to central issues in K-12 education. Limited to doctoral and/or Professional Administrative Services Credential students.

272 Philosophy and Ethics of Educational Leadership (4). 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. Limited to doctoral and/or Professional Administrative Services Credential students.

273A Student Assessment (2). 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. Limited to doctoral and/or Professional Administrative Services Credential students.

274A Professional and Staff Development (2) F. Strategies for developing staff development programs. Application of knowledge, management skills, and instructional strategies associated with adult learners. Means of integrating organizational goals and programs for adult learning performance. Alternative approaches to enhance professional and staff development; time constraints and financing staff development programs. Limited to doctoral and/or Professional Administrative Services Credential students.

274B Studies of Professional and Staff Development (4). Research and theory of effective strategies for professional and staff development. Topics include: adult learning as related to professional growth of teachers, staff development as vehicle for systemic reform, reforms to enhance teacher professionalization and empowerment. Limited to doctoral and/or Professional Administrative Services Credential students.

275A School Law and Political Relations (2 to 4) W. Legal framework of schools and public education. Political jurisdictions affecting educational policy. Influence of legal aspects to educational control. Political and sociological forces directly and indirectly affecting school practices. Theory of individual and group dynamics in achieving compromise, consensus, and coalitions to achieve educational goals. Limited to doctoral and/or Preliminary Administrative Services Credential students.

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. Limited to doctoral and/or Preliminary Administrative Services Credential students.

276B Studies of School Finance and Political Economy (2 to 4). Fundamental fiscal concepts applied to schooling. Topics include equity and inequalities in resource allocation, public school revenue sources and expenditure patterns, the politics of school finance, public versus private-sector supply of schooling, and the supply and demand for teachers. Doctoral students only.

277A Management of Human and Material Resources (2). Concepts, theories, and application for the development and management of human resources. Effective staff utilization patterns in consideration of personnel competencies, organizational constraints, and available resources. Emerging considerations in developing and implementing effective personnel policies. Short- and long-term planning for filling personnel needs. Limited to doctoral and/or Preliminary Administrative Services Credential students.

277B School Restructuring and Resource Allocation (2 to 4). Concepts and research on school change at the site level. Topics include: structure and use of physical environment, organization of school day and use of time, use of teachers and other staff, changes in governance and school-community relations. Doctoral students only.

278A Cultural and Socioeconomic Diversity (2). 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. Limited to doctoral and/or Preliminary Administrative Services Credential students.

278B Studies of Diversity and Inequality in Education (2 to 4). Study of relationships between individual diversity, social inequality, and education. How differences in socioeconomic status, race, culture, and gender translate in the educational process and affect educational outcomes. Addresses issues such as educational access, social mobility, and social reproduction. Limited to doctoral and/or Professional Administrative Services Credential students.

279 Research Applied to Administrative Practice (4). 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. Doctoral students only.

280 Special Topics in Education (2 to 8). Provides practitioners at the advanced degree level with insight and leadership skills for working with increasingly diverse school populations. Content varies with interest of the students and instructors. May focus on specific populations or broader content area such as education reform in California. Doctoral students only. May be taken for credit three times as topics vary.

281 Evaluation of Educational Programs (4). Alternative approaches to formative and summative evaluation of educational programs. Standards for effective evaluations. Epistemological, political, and practical issues in designing and conducting evaluations. Students critique specific studies relevant to educational administration and policy-making and design an evaluation. Corequisite: Education 279. Doctoral students only.

282 Graduate Seminar in the History of the Philosophy of Education (4). Draws upon results in the historical development of the philosophy of education from Plato, Quintillian, Augustine, Locke, Rousseau, to more contemporary thinkers such as Dewey, Freire, Egan, and Rorty.

285A-B Applications to Education of Social and Psychological Theories and Research Methods (4-4). 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. Doctoral students only.

287 Data Analysis in Education Research and Evaluation (4). Instruction and practice in statistical aspects of survey-based evaluations and quantitative research in education. Includes sampling, coding open-ended information, data management, scale construction, statistical analysis, and presentation of findings. Students analyze two data sets—a district-based evaluation and a national survey—using SPSS. Prerequisites: Education 279 and 281. Doctoral students only.

290A-B-C Seminar in Field Research in Education (1-1-1). 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 students only.

291A-B-C Directed Field Research in Educational Administration (1 to 3). 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 students only.

298 Individual Study (2 to 8). Individual research on topics related to educational leadership and practice. Taken in addition to regular Ed.D. course of study. Does not fulfill degree requirements. May be repeated for credit for a total of 24 units.

299 Dissertation Research (4 to 8) F, W, S. Specifically designed for students researching and writing their dissertations. Doctoral students only. Satisfactory/Unsatisfactory only. May be repeated for credit.

300A-B-C-D-E Student Teaching in the Elementary School (4-4-4-4-4) W, S. Student teaching experiences including orientation, seminars, and preparation for and assumption of 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. Limited to students accepted into the Teacher Credential Program.

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). 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. Limited to students accepted into the Teacher Credential Program. Course meets State requirements for Professional Clear Teaching Credentials.

301LA Multiple Subject Technology Resources Laboratory (1). 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. Limited to students accepted into the Teacher Credential Program. Course meets State requirements for Professional Clear Teaching Credentials.

301B Instructional Technology: Applications in the Multiple Subject Classroom (1). 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). 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). 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). 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. Limited to students accepted into the Teacher Education Credential Program. Course meets State requirements for Professional Clear Teaching Credentials.

302LA Single Subject Technology Resources Laboratory (1). 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. Limited to students accepted into the Teacher Credential Program. Course meets State requirements for Professional Clear Teaching Credentials.

302B Instructional Technology: Applications in the Single Subject Classroom (1). 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). 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 admitted to the UCI Department of Education and offered an intern teacher contract from a cooperating school district. Limited to students accepted into the Teacher Credential Program.

320A-B-C-D-E Student Teaching in Intermediate/Secondary School (4-4-4-4-4) W, S. Student teaching experience to include orientation, seminars, and preparation for and assumption of secondary school classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with the public school calendar. Education 320A-E is five days a week for a full second semester of the public school year. Limited to students accepted into the Teacher Credential Program.

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 admitted to the UCI Department of Education and offered an intern teacher contract from a cooperating school district. Limited to students accepted into the Teacher Credential Program.

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. Open to Preliminary Administrative Services Credential students only.

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. Open to Preliminary Administrative Services Credential students only.

360C-D-E Supervised Teaching in Bilingual Education, Elementary (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. Formerly Education 370A-B-C.

370C-D-E 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. Formerly Education 370D-E-F.

380 Health Education for Teachers (4). Includes an introduction to the health status of the elementary and secondary child, school health services, special health concerns, CPR training, and health resources. Course meets State requirement for Professional Clear Teaching Credentials.

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. Open to Preliminary Administrative Services Credential students only.

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. Open to Preliminary Administrative Services Credential students only.

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. Open to Preliminary Administrative Credential students only.

397D-E-F Professional Field Experience (4-4-4) 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. Open to Professional Administrative Credential students only.

398 Special Topics (3). Meets the induction and program planning requirements for students enrolled in the Professional Administrative Services Credential. Also serves as the final course in the program, wherein the candidate, the University instructor, and a representative of the involved school district assess and evaluate candidate competency. Open to Professional Administrative Services Credential students only. May be taken for credit twice.

399 University Teaching (1 to 4) F, W, S, Summer. Limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

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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, Biological Sciences, and Biochemical Engineering*

Glenn E. Healey, Ph.D. Stanford University, *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 and of Microbiology and Molecular Genetics*

Faryar Jabbari, Ph.D. University of California, Los Angeles, *Professor of Mechanical and Aerospace Engineering*

R. (Jay) Jayakrishnan, Ph.D. University of Texas at Austin, *Associate Professor of Civil Engineering*

Scott Jordan, Ph.D. University of California, Berkeley, *Associate Professor of Electrical and Computer Engineering*

Joyce H. Keyak, Ph.D. University of California, San Francisco, *Assistant Professor of Orthopaedic Surgery and of Mechanical and Aerospace Engineering in Residence*

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, *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 Student Affairs of the Henry Samueli School of Engineering and Professor of Mechanical and Aerospace Engineering*

Enrique J. Lavernia, Ph.D. Massachusetts Institute of Technology, *Department Chair and Professor of Chemical and Biochemical Engineering and Materials Science and Professor 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, *Associate Professor of Electrical and Computer Engineering*

Guann Pyng Li, Ph.D. University of California, Los Angeles, *Professor of Electrical and Computer Engineering*

Robert H. Liebeck, Ph.D. University of Illinois, Urbana, *Adjunct Professor of Mechanical and Aerospace Engineering*

Henry C. Lim, Ph.D. Northwestern University, *Professor of Chemical and Biochemical Engineering and of Microbiology and Molecular Genetics*

Kwei-Jay Lin, Ph.D. University of Maryland, *Professor of Electrical and Computer Engineering and of Information and Computer Science*

Feng Liu, Ph.D. Princeton University, *Associate 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, *Director of the Graduate Program in Transportation Science and Associate Professor of Civil and Environmental Engineering*
Kenneth D. Mease, Ph.D. University of Southern California, *Professor of Mechanical and Aerospace Engineering*
Martha L. Mecartney, Ph.D. Stanford University, *Associate Dean of Graduate Studies and Associate Professor of Materials Science and Engineering*
Farghalli A. Mohamed, Ph.D. University of California, Berkeley, *Professor of Materials Science Engineering and of Mechanical and Aerospace Engineering*
Sabee Molloi, Ph.D. University of Wisconsin, *Associate Professor of Radiological Sciences, Medicine, and Electrical and Computer Engineering in Residence*
Orhan Nalcioglu, Ph.D. University of Oregon, *Professor of Radiological Sciences, Medicine, Electrical and Computer Engineering, and Physics*
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*
Melissa E. Orme, Ph.D. University of Southern California, *Associate Professor of Mechanical and Aerospace Engineering*
Dimitri Papamoschou, Ph.D. California Institute of Technology, *Professor of Mechanical and Aerospace Engineering*
Gerard C. Pardoen, Ph.D. Stanford University, *Professor of Civil Engineering*, Registered Professional Engineer
Roger H. Rangel, Ph.D. University of California, Berkeley, *Professor of Mechanical and Aerospace Engineering and of Chemical and Biochemical Engineering and Materials Science*
Wilfred W. Recker, Ph.D. Carnegie-Mellon University, *Director of the Institute of Transportation Studies and Professor of Civil Engineering*
Amelia C. Regan, Ph.D. University of Texas, Austin, *Assistant Professor of Civil Engineering*
David J. Reinkensmeyer, Ph.D. University of California, Berkeley, *Assistant Professor of Mechanical and Aerospace Engineering*
Stephen G. Ritchie, Ph.D. Cornell University, *Department Chair and Professor of Civil Engineering*
G. Scott Samuelsen, Ph.D. University of California, Berkeley, *Director of the National Fuel Cell Research Center and Professor of Mechanical, Aerospace, and Environmental Engineering,* Registered Professional Engineer
Brett F. Sanders, Ph.D. University of Michigan, Ann Arbor, *Assistant Professor of Civil and Environmental Engineering*
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 of Electrical and Computer Engineering*
Roland Schinzinger, Ph.D. University of California, Berkeley, *Professor Emeritus of Electrical and Computer Engineering,* Registered Professional Engineer
Douglas Schmidt, Ph.D. University of California, Irvine, *Associate Professor of Electrical and Computer Engineering*
William E. Schmitendorf, Ph.D. Purdue University, *Associate Dean for Academic Affairs of the Henry Samueli School of Engineering and Professor of Mechanical and Aerospace Engineering*
Carlton H. Scott, Ph.D. The University of New South Wales, *Professor of Management and of Electrical and Computer Engineering*
Andrew A. Shapiro, Ph.D. University of California, Irvine, *Assistant Adjunct Professor of Materials Science*
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, *Professor of Electrical and Computer Engineering and of Information and Computer Science*
Frank G. Shi, Ph.D. California Institute of Technology, *Associate Professor of Chemical and Biochemical Engineering and Materials Science*
Andrei M. Shkel, Ph.D. University of Wisconsin, Madison, *Assistant Professor of Mechanical and Aerospace Engineering*
Athanasios Sideris, Ph.D. University of Southern California, *Professor of Mechanical and Aerospace Engineering*
William A. Sirignano, Ph.D. Princeton University, *Professor of Mechanical and Aerospace Engineering and of Chemical and Biochemical Engineering and Materials Science*
Harry Skinner, M.D. University of South Carolina, Ph.D. University of California, Berkeley, *Department Chair and Professor of Orthopaedic 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, *Associate Professor of Electrical and Computer Engineering*
Allen R. Stubberud, Ph.D. University of California, Los Angeles, *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*
Harry H. Tan, Ph.D. University of California, Los Angeles, *Associate Professor of Electrical and Computer Engineering*
Edriss S. Titi, Ph.D. Indiana University, *Professor of Mathematics and of Mechanical and Aerospace Engineering*
Bruce Tromberg, Ph.D. University of Tennessee, *Associate Professor of Surgery, Physiology and Biophysics, and Electrical and Computer 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 and of Information and Computer Science*
Vasan Venugopalan, Sc.D. Massachusetts Institute of Technology, *Assistant Professor of Chemical and Biochemical Engineering and Materials Science and of Surgery (Laser Division)*
Roberto Villaverde, Ph.D. University of Illinois, Urbana, *Professor of Civil Engineering,* Registered Professional Engineer
Frederic Yui-Ming Wan, Ph.D. Massachusetts Institute of Technology, *Professor of Mathematics and of Mechanical and Aerospace Engineering*
Jann N. Yang, D.Sc. Columbia University, *Professor of Civil Engineering,* Registered Professional Engineer

Lecturers

Erik A. Aagard, M.S. Brigham Young University, *Lecturer in Mechanical and Aerospace Engineering*
Syed Ahmed, Ph.D. University of California, Irvine, *Lecturer in Electrical and Computer Engineering*
Shawn R. Akins, B.S. University of California, Irvine, *Lecturer in Civil Engineering,* Registered Professional Engineer
Harut Barsamian, M.S. Polytechnique Institute (Armenia), *Lecturer in Electrical and Computer Engineering*
Paul Bopp, Ph.D. University of California, Los Angeles, *Lecturer in Civil and Environmental Engineering,* Registered Professional Engineer
Robert C. Carden, IV, Ph.D. University of California, San Diego, *Lecturer in Electrical and Computer Engineering*
Maqsood Chaudhry, Ph.D. University of California, Irvine, *Lecturer in Electrical and Computer Engineering and in Mechanical and Aerospace Engineering*
Gerard Coutu, Ph.D. University of Connecticut, *Lecturer in Electrical and Computer Engineering*
David J. Dimas, Ph.D. University of California, Irvine, *Lecturer in Mechanical and Aerospace 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*
Bijan Hagh, Ph.D. University of California, Los Angeles, *Lecturer in Civil and Environmental Engineering*
William C. Harrigan, Jr., Ph.D. Stanford University, *Lecturer in Materials Science*
Stephen M. Jaffe, Ph.D. Stanford University, *Lecturer in Materials Science*
Shahriar Jamasb, Ph.D. University of California, Davis, *Lecturer in Electrical and Computer Engineering*
Gerald Janicki, M.S. West Coast University, *Lecturer in Mechanical and Aerospace Engineering*
Alirea Kavianpour, Ph.D. University of Southern California, *Lecturer in Electrical and Computer Engineering*

Glen J. Kissel, Ph.D. Massachusetts Institute of Technology, *Lecturer in Mechanical and Aerospace Engineering*
Bryan J. Martin, Ph.D. University of California, Irvine, *Lecturer in Mechanical and Aerospace Engineering*
Scott Napp, Ph.D. University of California, Irvine, *Lecturer in Chemical and Biochemical Engineering*
Eric L. Peterson, Ph.D. Stanford University, *Lecturer in Mechanical and Aerospace Engineering*
Scott R. Ploen, Ph.D. University of California, Irvine, *Lecturer in Mechanical and Aerospace Engineering*
Ying-Keung Poon, Ph.D. Massachusetts Institute of Technology, *Lecturer in Civil Engineering*
Adham Refaat, M.A. University of California, Los Angeles, *Lecturer in Civil Engineering*
Abdul Salim, Ph.D. University of Cincinnati, *Lecturer in Civil Engineering*
Mohammed S. Santina, Ph.D. University of California, Irvine, *Lecturer in Electrical and Computer Engineering*
Roger D. Schaufele, M.S. California Institute of Technology, *Lecturer in Mechanical and Aerospace Engineering*
John G. Stupar, E.M.B.A. Claremont Graduate School, *Lecturer in Engineering*

Overview

The Henry Samueli 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. Equipped with superb experimental facilities and a state-of-the-art computational infrastructure, the School distinguishes itself by a strong emphasis on cross-disciplinary research and educational opportunities. 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, Environmental, 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 193–198.

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 172–174.

Civil Engineering addresses the challenges of large-scale engineering projects of importance to society as a whole, such as water distribution, transportation, and building design. Specializations are provided in General Civil, Environmental, Structural, Transportation Information and Control Systems, and Water Resource Engineering. See pages 177–182.

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 185–191.

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 three general areas of studies—Electro-optics and Solid-State Devices, Power Systems, and Systems and Signal Processing—all at the forefront of technological advancement. See pages 185–191.

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 164–166.

Environmental Engineering concerns the development of strategies to control and minimize pollutant emissions, to treat waste, and to remediate polluted natural systems. Emphasis areas include air quality and combustion, water quality, and water resources engineering. See pages 177–182.

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 193–198.

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, Computer Networks and Distributed Computing, and Computer Systems and Software; Engineering, with concentrations in Biomedical Engineering, 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 parallel and distributed computer systems, VLSI design, computer architecture, image and signal processing, communications, control systems, and optical and solid-state devices. Research in combustion and propulsion sciences, laser diagnostics, supersonic flow, direct numerical simulation, computer-aided design, robotics, control theory, parameter identification, material processing, electron microscopy, and ceramic engineering are all available in Mechanical and Aerospace Engineering.

Additional publications describing undergraduate and graduate academic study and research opportunities are available through the Henry Samueli School of Engineering, and the Departments of Chemical and Biochemical Engineering and Materials Science, 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 STUDY

Student Affairs Office
101 Engineering and Computing Trailer; (949) 824-4334
John LaRue, **Associate Dean**

PLANNING A PROGRAM OF STUDY

Advising

Academic advising is available from academic counselors and peer advisors in the School's Student Affairs Office, 101 Engineering and Computing Trailer, and from faculty advisors. *Students must realize, however, that ultimately they alone are responsible for the planning of their own program and for satisfactory completion of the graduation requirements*. Students are encouraged to consult with the academic counselors in the Engineering Student Affairs Office whenever they desire to change their program of study. All Engineering majors are required to meet with their faculty advisor at least once each year.

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 stay on track 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.

Required courses may be replaced by other courses if the student substantiates the merits of the program of study and obtains prior approval from faculty in the School.

Students should be aware that most Engineering courses require the completion of prerequisites. The sample programs shown in each departmental description constitute preferred sequences which take into account all prerequisites. 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 policy does not permit the addition of Engineering courses after the third week or deletion of Engineering courses after the sixth 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 FORTRAN, C, C++, and/or Pascal) is expected in all Engineering courses.

Students in the School, 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, 2001 must have submitted their completed application forms during the priority filing period (November 1–30, 2000).

High school students wishing to enter the UCI Engineering program must have completed four years of mathematics and are advised to have completed one year each of physics and chemistry. That preparation, along with honors courses and advanced placement courses, is fundamental to success in the Engineering program and is vital to receiving first consideration for admittance to an Engineering major during periods of restricted enrollments. Special attention will also be given to applicants who have submitted their SAT I and three SAT II examination scores by mid-January, 2001. 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 Henry Samueli 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 Henry Samueli 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 for the specific requirements of each program.

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.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

All students in the Henry Samueli School of Engineering must fulfill the following requirements.

University Requirements: See pages 54–59.

School Requirements

The minimum subject-matter requirements for graduation are: 48 units of mathematics and science including general chemistry and calculus-based physics (with at least three quarters in either area), and 72 units of engineering topics. Engineering topics consist 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 Student Affairs Office.

Undergraduate Programs

Specific information about courses fulfilling School and major requirements can be found on the following pages. Note that some majors require more units than the School requirements.

MINORS OF INTEREST TO ENGINEERS

Minor in Earth and Atmospheric Sciences

The minor in Earth and Atmospheric Sciences focuses on the application of physical, chemical, and biological principles to understanding the complex interactions of the atmosphere, ocean, and land through climate and biogeochemical cycles. See the Department of Earth System Science in the School of Physical Sciences section of this *Catalogue* for more information.

Minor in Global Sustainability

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section of this *Catalogue* for more information.

CAREER ADVISING

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information. In addition, special career planning events are held throughout the year including an annual Career Fair. Individual career counseling is available, and students have access to the Career Library which contains information on graduate and professional schools in engineering, as well as general career information.

HONORS

Graduation with Honors. Undergraduate honors at graduation in the Henry Samueli School of Engineering are computed by using 50 percent of the overall UCI GPA and 50 percent of the upper-division Engineering GPA. (Engineering E190 is not used in the calculation of the upper-division GPA.) A general criterion is that students must have completed at least 72 units in residence at a University of California campus. Approximately 1 percent of the graduating class shall be awarded *summa cum laude,* 3 percent *magna cum laude,* and 8 percent *cum laude,* with no more than 12 percent being awarded honors. Other important factors are considered (see page 51).

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.

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 Pardoen 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.

Additional awards in other categories are made throughout the academic year.

CENTER FOR OPPORTUNITIES AND DIVERSITY IN ENGINEERING

111 Engineering and Computing Trailer; (949) 824-2077
Robin Jeffers, **Director**

The Center for Opportunities and Diversity in Engineering (CODE) houses a comprehensive recruitment, retention, and placement program in the Henry Samueli School of Engineering which attempts to provide academic support and professional development to students from backgrounds which have traditionally had limited access to the engineering profession. Services provided include: advisement, tutoring, study rooms, notification of research opportunities, fellowships, guest speakers, and employment opportunities. At the core of its activity is the focus on community building, and students are encouraged to bond around their common interests and goals.

SPECIAL PROGRAMS AND COURSES

Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; telephone (949) 824-5461; e-mail: honors@uci.edu; World Wide Web: http://www.honors.uci.edu/.

Engineering 199

Every undergraduate student in the Henry Samueli School of Engineering has the opportunity to pursue independent research under the direct supervision of a professor in the School. Interested students should consult with a faculty member to discuss the proposed research project. If the project is agreed upon, the student must fill out a 199 Proposal Form and submit it to the Engineering Student Affairs Office.

NASA Undergraduate Scholars Awards for Research

The NASA Undergraduate Scholars Awards for Research (NASA-USAR) is designed to increase the presence of socially and economically disadvantaged students and individuals with disabilities, with special emphasis on those students historically underrepresented, in NASA programs (Disadvantaged Students). Each award—$12,000 per year per student—is issued as a grant to UCI in the name of the USAR 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. Call (949) 824-4189 for additional information.

Undergraduate Research Opportunities Program

The Undergraduate Research Opportunities Program (UROP) encourages and facilitates research and creative activities by undergraduates. Research opportunities are available not only from every discipline, interdisciplinary program, and school, but also from many outside agencies, including national laboratories, industrial partners, and other universities. UROP offers assistance to students and faculty through all phases of the research activity: proposal writing, developing research plans, resource support, conducting the research and analyzing data, and presenting results of the research at the annual spring UCI Undergraduate Research Symposium. Calls for proposals are issued in the fall and spring quarters. Projects supported by UROP may be done at any time during the academic year and/or summer, and the research performed must meet established academic standards and emphasize interaction between the student and the faculty supervisor. In addition, all students participating in faculty-guided research activities are welcome to submit their research papers for faculty review and possible publication in the annual *UCI Undergraduate Research Journal*. For more information, contact the UROP Office, 1100 Student Services II; telephone (949) 824-4189; e-mail: urop@uci.edu; World Wide Web: http://www.urop.uci.edu/.

Accelerated M.S. and M.S./Ph.D. Program in the Henry Samueli School of Engineering

Exceptionally promising UCI undergraduate Engineering students with a minimum cumulative 3.5 GPA may, during their junior or senior year, apply for streamlined admission into an M.S. program within the Henry Samueli School of Engineering. Streamlined admission would allow a student to petition for exemption from UCI's GRE requirement for graduate school admission. (The exemption applies only to current UCI students applying for admission to one of the M.S. programs in the UCI Henry Samueli School of Engineering; other graduate schools may still require the GRE.)

The student would request GRE exemption at the time of applying. Streamlined admission applicants would otherwise and in all other ways be evaluated in the same manner as other applicants to the School's graduate programs. Occasionally, a candidate for streamlined admission may be required by the faculty to submit GRE scores in support of the graduate application. In such cases the student will be informed in writing within two weeks following receipt of the application package.

Students offered admission under the streamlined procedures may, upon completion of the undergraduate degree program and following matriculation as a graduate student, petition to credit toward M.S. degree requirements up to 18 units of graduate-level course work completed in excess of requirements for the UCI bachelor's degree.

Students who wish to apply for early admission to the M.S./Ph.D. program may do so in their senior year but must take the GRE prior to admission.

Undergraduate streamlined admission students admitted to an M.S. or M.S./Ph.D. program within the Henry Samueli School of Engineering may also petition their department to use up to eight units of 199 Individual Study to meet undergraduate degree requirements, either as design units or as preliminary preparation for their master's thesis work.

Education Abroad Program

Upper-division and graduate Engineering students may participate in a number of programs which offer unique opportunities for education and training abroad. The University's Education Abroad Program (EAP) offers engineering course work for UCI academic credit at a number of universities. Some of the EAP-affiliated engineering schools require proficiency in the host country's language, while others are English speaking. Study abroad may postpone the student's graduation for one or two quarters, depending primarily on the student's language preparation (which can begin in the freshman year), but the added experience can add to the student's maturity and professional competence. EAP students pay regular UCI fees and keep any scholarships they may have. Additional information is available in the Education Abroad Program section.

STUDENT PARTICIPATION AND ORGANIZATIONS

Faculty and committee meetings (except those involving personnel considerations) are open meetings; in addition to designated student representatives, all students are encouraged and expected to participate in the development of School policy. Student evaluation of the quality of instruction for each course is requested each quarter.

Engineering students may join any of a number of student organizations. Most of these organizations are professionally oriented and in many instances are local chapters of national engineering societies. A primary function of these groups is to provide regular technical and social meetings for students with common interests. Most of the groups also participate in the annual Engineering Week activities and in other School functions.

Associated General Contractors (AGC). A student chapter of the national organization, ACG at UCI is an academic engineering club for students interested in the construction field.

American Institute of Aeronautics and Astronautics (AIAA). The AIAA is a technical society of 40,000 professional and student members devoted to science and engineering in the field of aerospace. The local chapter's primary activities include seminars, tours of industries, and mentoring for students by professional members.

American Institute of Chemical Engineers (AIChE). AIChE, a student chapter of the national organization, provides Chemical Engineering majors with the opportunity to interact with faculty and professionals in the field.

American Society for Civil Engineers (ASCE). One of the larger engineering clubs, ASCE at UCI is a student chapter of the national organization. The ASCE focuses its efforts on interactions with professional engineers, sponsorship of Engineering Week activities, and participation in the annual ASCE Southwest Conference.

American Society 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.

Omega Chi Epsilon. The student chapter of the National Chemical Engineering Honor Society aims to recognize and promote high scholarship, original investigation, and professional service in chemical engineering.

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 Hispanic Professional Engineers (SHPE). SHPE is both a student and professional organization. The UCI SHPE chapter works to recruit, retain, and graduate Latino engineers by providing a comprehensive program which includes high school visitations, coordinated study sessions, and industry speakers and tours. At the professional level there are opportunities for career positions and scholarships for members who are enrolled in undergraduate and graduate engineering and computer science programs.

Society of Automotive Engineers (SAE). Members of the SAE chapter at UCI participate in technical expositions, mini-Baja buggy races, student competitions, and social activities.

Society of Women Engineers (SWE). SWE is a national service organization dedicated to the advancement of women in engineering. UCI's student chapter encourages academic and social support, and membership is open to both men and women in technical majors interested in promoting camaraderie and in helping to make engineering study a positive experience.

Structural Engineers Association of Southern California (SEAOSC). The UCI student chapter of SEAOSC introduces students to the field of structural engineering through tours, speakers, and SEAOSC dinners with professional members of the organization.

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.

SCHOOLWIDE PROGRAM

Faculty in the Departments of Chemical and Biochemical Engineering and Materials Science, 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.

General Undergraduate Major in Engineering

101 Engineering and Computing Trailer; (949) 824-4334

The Henry Samueli School of Engineering offers a general undergraduate major in Engineering to upper-division students who wish to pursue broad multidisciplinary programs of study or who wish to focus on a special area not offered in the four departments. Examples of other areas that may be of interest are: biochemical engineering, electromechanical engineering, project management, or hydrology. The program of study in any area, aside from the established specializations, is determined in consultation with a faculty advisor.

ADMISSIONS

The general major in Engineering is only open to junior-standing students who have completed the required lower-division courses with a high level of achievement. Freshmen are not eligible to apply for this major. The sequential nature of the Engineering program and the fact that many courses are offered only once a year make it beneficial for students to begin their studies in the fall quarter.

Transfer students. The general Engineering major is a specialized program for students who are seeking careers in areas other than traditional engineering disciplines and is open to upper-division students only. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of engineering physics (with laboratory), one course in computational methods (FORTRAN, C, C++), and two additional approved courses for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact the Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN ENGINEERING

Credit for at least 196 units including:

University Requirements: See pages 54–59.

School Requirements: See pages 161–162.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E (24 units).

Basic Science Courses: Chemistry 1A-B and 1LA-LB, Physics 7A-B-D-E and 7LA-LB-LD, 51A-B, and 52A-B-C (at least 44 units).

Basic Engineering Courses: Engineering CEE10 or ECE10 or MAE10, E54, CEE30 or MAE30, E80 or CEE80 or MAE80, ECE70A or ECE72 (18–19 units).

Engineering Core Courses: Engineering ChE60 or MAE91, MAE150 or ChE150 or both CEE150 and CEE150L, CEE170 or MAE130A (11-14 units).

Technical Electives: 51 units; all technical electives must be determined in consultation with a faculty advisor.

Design unit values are indicated at the end of each course description. The faculty advisors and the Student Affairs Office can provide necessary guidance for satisfying the design requirements.

PROGRAM OF STUDY

Students should keep in mind that the program for the major in Engineering is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. Students must have their programs approved by an academic counselor in Engineering. A sample program of study is available in the Student Affairs Office.

Minor in Biomedical Engineering

Student Affairs Office
101 Engineering and Computing Trailer; (949) 824-6162
Steven C. George, **Director**

Participating faculty are from the Schools of Biological Sciences and Physical Sciences, the Henry Samueli School of Engineering, the College of Medicine, and the Department of Information and Computer Science. A list of participating faculty and their research specialties is available on page 167.

The minor in Biomedical Engineering is an interdisciplinary curriculum that includes courses from Engineering, Physical Sciences, and Biological Sciences. Private biomedical industry has indicated a keen interest in engineers that have a more traditional engineering degree (i.e., electrical engineering), but also possess some in-depth knowledge of biomedical systems. Hence, the minor in Biomedical Engineering is designed to provide a student with the introductory skills necessary to perform as an engineer in the biomedical arena. Because a biomedical engineer requires knowledge of many disciplines, the 10 courses required for the minor include biology, mathematics, and organic chemistry courses, in addition to biomedical engineering courses. Engineering, Physical Sciences, and Biological Sciences students who wish to minor in Biomedical Engineering will find that several of the 10 courses required for the minor are also required for their majors.

ADMISSIONS

Students interested in the minor in Biomedical Engineering must apply through the Henry Samueli School of Engineering Student Affairs Office and must have a UCI cumulative GPA of 2.5 or higher.

Students in the minor do not need to satisfy the regular prerequisites for Biological Sciences 98; rather, they will be permitted to enroll in the course only after successful completion of Mathematics 2D, 3A, 3D, and either Chemistry 51A-B, 51LA-LB or 52A-B, 52LA-LB.

NOTE: Students may not receive both a minor in Biomedical Engineering and a specialization in Biochemical Engineering within the Chemical Engineering major.

REQUIREMENTS FOR THE MINOR IN BIOMEDICAL ENGINEERING

Mathematics Courses: Mathematics 2D, 3A, and 3D (12 units).

Basic Science Courses: Chemistry 51A-B, 51LA-LB or 52A-B, 52LA-LB; Biological Sciences 98, 99 (20 units).

Biomedical Engineering Core Courses: Engineering 110A-B (8 units).

Technical Elective: one course from the following: Engineering ChE180, ECE176, ECE178, Biological Sciences 130A, 130B; others as approved by the director (4 units).

Courses in Engineering

LOWER-DIVISION

NOTE: With the exception of E5 and E54, the courses listed below are open only to students in the Henry Samueli School of Engineering. All other majors must petition for permission to enroll.

E2 Energy Sources, Energy Uses (4) F. Technical aspects of energy extraction, transport, use, and environmental effects. Devices for energy conversion. (Design units: 0)

E5 Exploring the Engineering Mind: Building Bicycles (4) S. Structured to introduce students to the engineering mind—how engineers analyze problems and design solutions. Topics include how materials work, how nature designs materials (such as seashells and eggshells), and how engineers design using the example of the bicycle. May not be taken by Engineering students to fulfill major requirements. **(II)**

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. Only one course from Engineering E10, Engineering CEE10, Engineering MAE10, and Engineering ECE10 may be taken for credit. (Design units: 0). *Not offered 2000-2001.*

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 Physics 5A-B; Chemistry 1A. (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, 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, Mathematics 2D. Only one course from Engineering E80, Engineering MAE80, and Engineering CEE80 may be taken for credit. (Design units: 0)

E92 Engineering and Computer Science Laboratory (ECSEL) (0) F. Comprehensive academic support designed primarily for underrepresented or underprepared students in Engineering, ICS, or selected areas of the physical sciences. Typical program activities: tutoring, study skills, career planning,

self-esteem enhancement, library research techniques, 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)

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

E110A Systems Anatomy and Physiology I (4) W. A quantitative and systems approach to understanding physiological systems. Systems covered include the cardiopulmonary, circulatory, and renal systems. Prerequisite: Mathematics 3D or equivalent, or consent of instructor. (Design units: 0)

E110B Systems Anatomy and Physiology II (4) S. A quantitative and systems approach to understanding physiological systems. Systems covered include the nervous and musculoskeletal systems. Prerequisite: Mathematics 3D or equivalent, or consent of instructor. (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. Students must be of junior or senior standing in Engineering and have completed 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)

E193 Engineering Leadership (3) S. Introduction to the human dimensions of engineering, including societal, financial, governmental, legal, and ethical considerations. Typical areas: project management, product marketing, communication skills, intellectual property, business financing, and government relations. Characteristics and skills of effective leaders are delineated. (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)

197A Educational Strategies for Tutoring and Teacher Aiding (4). Placement in a public elementary or secondary school to gain experience as a tutor or teacher aide. Emphasis on cognitive learning and the development of instructional strategies and resources which can be used in effective cross-age and cross-cultural experiences. Pass/Not Pass only. May be repeated for credit. Same as Education 100. (Design units: 0)

E199 Individual Study (1 to 4) F, W, S. Supervised independent reading, research, or design for undergraduate Engineering majors. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

EH199 Individual Study for Honors Students (4) F, W, S. Supervised research in Engineering for participants in the Campuswide Honors Program. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisites: consent of instructor; open only to members of Campuswide Honors Program. May be repeated for credit. (Design units: varies)

GRADUATE STUDY

Student Affairs Office
101 Engineering and Computing Trailer; (949) 824-6475
John LaRue, **Associate Dean**

ADMISSIONS

For information on requirements for admission to graduate study at UCI, contact the appropriate Engineering department or the Student Affairs Office in the Henry Samueli School of Engineering. Additional information is available in the *Catalogue* section entitled Research and Graduate Studies. Admission to graduate standing in the Henry Samueli 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 rare 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 Henry Samueli 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 following section on Transfer of Courses.

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 Programs

Specific information about program requirements can be found on the following pages.

Graduate Study in Biomedical Engineering

204 Rockwell Engineering Center; (949) 824-3494
Steven C. George, **Director**

Faculty

Nancy Allbritton: Intracellular signaling and biophysical optics
Michael Berns: Photomedicine; laser microscopy; biomedical devices
Lubomir Bic: Distributed computing, parallel processing in biological systems
Bruce Blumberg: Biorobotics, functional genomics
Kenneth Chang: Development of optical diagnostics and treatment systems of GI tract
Ying-Chih Chang: Molecular engineering, polymer chemistry, biomaterials, interfacial phenomena
Zhongping Chen: Microfabrication and fiber-optic-based biomedical imaging systems
Carl Cotman: Computational methods in brain aging, Alzheimer's disease
Johannes De Boer: Biomedical imaging modalities
Rui J. P. de Figueiredo: Biomedical signal and image processing and analysis
Derek Dunn-Rankin: Laser spectroscopy and optical diagnostics
James Earthman: Biomaterials, dental and orthopaedic implants
Ron Frostig: Optical methods for brain imaging, functional organization of the cortex
Steven C. George: Physiological modeling, gas exchange, computational methods, tissue engineering
Joyce Keyak: Bone mechanics, finite element modeling, computed tomography
Richard Lathrop: Computational methods in protein engineering
Guann Pyng Li: Microelectromechanical systems for biomedical applications
Mark Mandelkern: Positron emission tomography, electrophysiology and source location, functional imaging, elementary particle physics
Sabee Molloi: Digital radiography, application of digital subtraction angiography to cardiac imaging, coronary artery flow measurement, digital image processing
Robert Moyzis: Human genome sequencing, nanoscale DNA diagnostics
J. Stuart Nelson: Phototherapy, dermatology, cell biology, biomedical device development
Ian Parker: Optical microscopy for cellular systems, intracellular calcium dynamics
David Reinkensmeyer: Skeletal muscle control, biorobotics, rehabilitation
Suzanne Sandmeyer: Recombinant DNA technology; DNA chip design
Phillip C.-Y. Sheu: Biomedical database management, Intranet/Internet technologies
Harry Skinner: Orthopaedic implant devices, minimally invasive surgical systems
Douglas Tobias: Computational methods, algorithm development, protein folding
Bruce Tromberg: Photon migration, biophysics, optical microscopy, fiber-optic sensors
Vasan Venugopalan: Optical diffusion theory, photo-thermal and -mechanical phenomena

Participating faculty are from the Schools of Biological Sciences and Physical Sciences, the Henry Samueli School of Engineering, the College of Medicine, and the Department of Information and Computer Science.

Biomedical engineering combines engineering expertise with medical needs for the enhancement of health care. It is a branch of engineering in which knowledge and skills are developed and applied to define and solve problems in biology and medicine. Students choose the biomedical engineering field to be of service to people, for the excitement of working with living systems, and to apply advanced technology to the complex problems of medical care. Biomedical engineers may be called upon to design instruments and devices, to bring together knowledge from many sources to develop new procedures, or to carry out research to acquire knowledge needed to solve new problems.

During the last 20 years, we have witnessed unprecedented advances in engineering, medical care, and the life sciences. The combination of exploding knowledge and technology in biology, medicine, the physical sciences, and engineering, coupled with the changes in the way health care will be delivered in the next century, provide a fertile ground for biomedical engineering. Biomedical engineering, at the confluence of these fields, has played a vital role in this progress. Traditionally, engineers have been concerned with inanimate materials, devices, and systems, while life scientists have investigated biological structure and function. Biomedical engineers integrate these disciplines in a unique way, combining the methodologies of the physical sciences and engineering with the study of biological and medical problems. The collaboration between engineers, physicians, biologists, and physical scientists is an integral part of this endeavor and has produced many important discoveries in the areas of artificial organs, artificial implants, and diagnostic equipment.

Programs of study leading to the M.S. and Ph.D. degrees in Engineering with a concentration in Biomedical Engineering are offered.

Required Background

Because of its interdisciplinary nature, biomedical engineering attracts students with a variety of backgrounds. Thus, the requirements for admission are tailored to students who have a bachelor's degree in an engineering, physical science, or biological science discipline, with a grade point average of 3.0 or higher in their upper-division course work. The minimum course work requirements for admission are four quarters of calculus, three quarters of calculus-based physics, three quarters of chemistry, and two quarters of biology. Students without an engineering undergraduate degree may be required to take additional relevant undergraduate engineering courses during their first year in the program; any such requirements will be specifically determined by the BME Graduate Committee on a case-by-case basis and will be make known to the applicant at the time of acceptance to the program.

A minimum GRE score of 1,200 (quantitative plus verbal) is required, or minimum combined MCAT scores in Physics, Quantitative Methods, and Science problems of 30 are recommended, although not required. A minimum score of 600 on the Test of English as a Foreign Language (TOEFL) is recommended of all foreign students whose native language is not English. In addition, all applicants must submit three letters of recommendation.

Exceptionally promising UCI undergraduates may apply for admission through the Henry Samueli School of Engineering's accelerated M.S. and M.S./Ph.D. program, however, these students must satisfy the course work and letters of recommendation requirements described above.

Core Requirement

All students are required to take a set of core courses which total 15–16 units: Developmental and Cell Biology 231B, Engineering E210A, B, and *one* of the following: Engineering CBE220, CEE283, ECE235, ECE240A, MAE200A, or MAE200B.

Elective Requirement

The remaining 20–21 units required to fulfill the course requirements for the M.S. and Ph.D. degree are comprised of elective courses offered within the Henry Samueli School of Engineering, the Schools of Biological Sciences and Physical Sciences, and the College of Medicine. A minimum of 12 of the elective units must be taken from the Henry Samueli School of Engineering. The group of elective courses must be approved by the BME Graduate Committee, for M.S. students, or, for Ph.D. students, the student's graduate advisory committee, and are chosen to meet the specific needs of each student. The electives must provide breadth in biomedical engineering, but also provide specific skills necessary to

the specific research the student may undertake as part of the degree requirements.

Areas of Emphasis

Although a student is not required to formally choose a specific research focus area, three research thrust areas have been identified for the program: biophotonics, biomedical nanoscale systems, and biomedical computational technologies. The three areas capitalize on existing strengths within the Henry Samueli School of Engineering and UCI as a whole, interact in a synergistic fashion, and will train biomedical engineers who are in demand in both private industry and academia.

Biophotonics. This research area includes the use of light to probe individual cells and tissues and whole organs for diagnostic and therapeutic purposes. The research areas include both fundamental investigation on the basic mechanisms of light interaction with biological systems and the clinical application of light to treat and diagnose disease. Current and future foci of the faculty are: (1) microscope-based optical techniques to manipulate and study cells and organelles; (2) development of optically based technologies for the non-invasive diagnosis of cells and tissues using techniques that include fiber-optic-based sensors, delivery systems, and imaging systems; and (3) development of optically based devices for minimally invasive surgery.

Nanoscale Systems. This class of research areas encompasses the understanding, use, or design of systems that are at the micron or submicron level. Current strengths within the Henry Samueli School of Engineering and the UCI faculty as a whole include biomaterials, micro-electromechanical systems (MEMS), and the design of new biomedical molecules. The focus of biomedical engineering research in this area is the integration of nanoscale systems with the needs of clinical medicine. Projected areas of growth include: (1) micro-electromechanical systems (MEMS) for biomedical devices and biofluid assay; (2) programmable DNA/molecular microchip for sequencing and diagnostics; and (3) biomaterials and self-assembled nanostructures for biosensors and drug delivery.

Biomedical Computational Technologies. Biomedical computational technologies include both advanced computational techniques, as well as advanced biomedical database systems and knowledge-base systems. Computational technologies that will be developed in this research area include: (1) methods for biomedical analysis and diagnosis such as physical modeling of light-tissue interactions, atomic-level interactions, image processing, pattern recognition, and machine-learning algorithms; (2) language instruction and platform standardization; and (3) machine-patient interfaces. Areas of research related to biomedical database systems include the development of new technologies which can capture the rich semantics of biomedical information for intelligent reasoning.

MASTER OF SCIENCE DEGREE

Two options are available for the M.S. degree: a thesis option and a comprehensive examination option. Both options require the student to specify an area of specialty, and to complete a minimum of 36 units, 24 of which must be at the 200 level including the 15–16 units that comprise the core courses as described above. The degree will be granted upon the recommendation of the Director and the Henry Samueli School of Engineering Associate Dean of Graduate Studies.

Plan I: Thesis Option

A thesis option is available to students who prefer to conduct a focused research project. Students selecting this option must select a thesis advisor and complete an original research investigation including a written thesis, and obtain approval of the thesis by a thesis committee. A maximum of eight M.S. research units (i.e., ECE296) may be applied toward the 36-unit requirement.

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.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. degree requires the achievement of an original and significant body of research that advances the discipline. A student with a B.S. degree may enter the Ph.D. program directly, provided they meet the background requirements described above.

Each student is matched with a faculty advisor, and an individual program of study is designed by the student and a faculty advisory committee. There are no additional course requirements beyond that of the M.S. degree. Three milestones are required: (1) successful completion of a preliminary examination; (2) formal advancement to candidacy by successfully passing a qualifying examination; and (3) the submission of an acceptable written dissertation and its successful oral defense.

The preliminary examination is a written examination prepared by the Graduate Committee and taken by students at the end of their first year. Students who fail the examination may retake it once within six months of the initial attempt. Students who fail the second attempt are not allowed to continue in the program. After passing the preliminary examination, students are matched with a BME faculty advisor, and an individual program of study is designed by the student and advisor.

Advancement to candidacy must be completed between the ninth and twelfth quarters of enrollment, usually during a student's third year. (Special exceptions can be made, but a formal request with justification must be supplied in writing to the Director.) The qualifying examination follows campus and the Henry Samueli School of Engineering guidelines and consists of an oral and written presentation of original work completed thus far, and a coherent plan for completing a body of original research. The qualifying examination is presented to the student's graduate advisory committee, which is selected by the student and faculty advisor and must have a minimum of five faculty (including the faculty advisor). Of these five faculty, a minimum of three must be BME faculty. In addition, a minimum of two faculty must have part of their primary appointment in the Henry Samueli School of Engineering.

The Ph.D. is awarded upon submission of an acceptable written dissertation and its successful oral defense. The degree is granted upon the recommendation of the graduate advisory committee and the Dean of Graduate Studies. Completion of the Ph.D is expected in the fifth year although a maximum of seven years (28 academic quarters) is allowed.

COURSES IN BIOMEDICAL ENGINEERING

Engineering 210A Systems Anatomy and Physiology I (4) W. A quantitative and systems approach to understanding physiological systems. Systems covered include the cardiopulmonary, circulatory, and renal systems. Prerequisite: consent of instructor.

Engineering 210B Systems Anatomy and Physiology II (4) S. A quantitative and systems approach to understanding physiological systems. Systems covered include the nervous and musculoskeletal systems. Prerequisite: consent of instructor.

Engineering 298 Seminars in Biomedical Engineering (1) F, W, S. Presentation of advanced topics and reports of current research efforts in biomedical engineering. Designed for graduate students in the Biomedical Engineering program. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

Graduate Study in Environmental Engineering

101 Engineering and Computing Trailer; (949) 824-7188
Stanley B. Grant, **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
Scott Samuelsen: Combustion, pollutant formation, energy efficiency and utilization, air quality, environmental ethics
Brett F. Sanders: Environmental and computational fluid dynamics, water resources engineering
Jan Scherfig: Biological treatment, water reclamation and reuse, waste treatment
Roland Schinzinger: Electric energy systems
William A. Sirignano: Combustion, pollutant formation, fire spread, noise suppression

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 MAE110, MAE162, or MAE164.
Environmental Chemistry: Engineering CEE162 or Earth System Science 102.
Environmental Microbiology: Engineering ChE165 or equivalent.
Fluid Mechanics: Engineering CEE170, ChE120A, or MAE130A.
Reactor Theory and Design: Engineering ChE160.

Core Requirement

Students must complete an advanced mathematics course, either Engineering CBE220 (Applied Chemical Engineering Mathematics), CEE283 (Mathematical Methods in Engineering Analysis), or MAE200B (Engineering Analysis II).

Areas of Emphasis

Each student selects a primary area of emphasis within Environmental Engineering: Water Quality, Water Resources, or Air Quality and Combustion. To achieve the interdisciplinary objectives of the program, students are required to take at least two electives outside their primary area, one each in two different areas. These outside electives may also be taken from approved courses in other academic units, including the Schools of Social Ecology and Physical Science, and the College of Medicine. Electives within each of the emphasis areas in Engineering are listed below.

Water Quality: Engineering CBE230 (Transport Phenomena), CBE240 (Bioengineering with Recombinant Organisms), CBE260 (Reaction Engineering), CBE262 (Bioreactor Engineering), CBE270 (Bioremediation), CEE263 (Advanced Biological Treatment Processes), CEE265 (Advanced Physical-Chemical Treatment Processes), CEE266 (Aqueous Geochemistry), CEE267 (Advanced

Treatment Models), CEE269 (Hazardous Waste Treatment and Disposal).

Water Resources: Engineering CEE271 (Flow in Unsaturated Media), CEE272 (Stochastic Geohydrology), CEE274A (Transport Phenomena in Saturated Porous Media), CEE274B (Transport Phenomena in Unsaturated Porous Media and Fractures), CEE276 (Surface Water Hydrology), CEE277 (Transport in Rivers and Estuaries), CEE278 (Flow in Rivers and Estuaries), CEE279A (Computations in Environmental Hydrologies), CEE279B (Computation in Subsurface Hydrology).

Air Quality and Combustion: Engineering MAE210 (Advanced Fundamentals of Combustion), MAE215 (Advanced Combustion Technology), MAE230A (Advanced Incompressible Fluid Dynamics I), MAE231 (Fundamentals of Turbulence), MAE232 (Atmospheric Turbulence), MAE233 (Turbulent Free Shear Flows), MAE260 (Issues Related to Atmospheric Processes), MAE261 (Air Pollution Modeling), MAE264 (Combustion Particulates and Aerosols), MAE280 (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 CBE220, MAE200B, or CEE283. A maximum of eight M.S. research units and up to eight units of upper-division undergraduate elective courses may be applied to the degree with the 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 CBE220, MAE200B, or CEE283. Up to 12 units may be taken as upper-division undergraduate elective courses.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. concentration in Environmental Engineering requires the achievement of original and significant research that advances the discipline. Doctoral students are selected on the basis of an outstanding record of scholarship and potential for research excellence.

The doctoral study program is tailored to the individual student in consultation with a faculty advisory committee. 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. Within this flexible framework, the School maintains specific guidelines that outline the milestones of a typical doctoral program. All doctoral students should consult the Environmental Engineering program guidelines for details, but there are several milestones to be passed: admission to the Ph.D. program by the faculty, passage within the first year of a preliminary examination 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

101 Engineering and Computing Trailer; (949) 824-5807
Farghalli A. Mohamed, **Director**

Faculty

Peggy Arps *(Adjunct):* Environmental molecular microbiology and biotechnology, chemistry and environmental engineering pertaining to industrial processes/products
Ying-Chih Chang *(Adjunct):* Biomolecular engineering, organic thin-film fabrication
James C. Earthman: Fatigue behavior and cyclic damage, automated materials testing, high-temperature fracture, biomaterials, cellular networks
Hideya Gamo: Quantum electronics, electromagnetics
Enrique J. Lavernia: Processing structural materials and composites; manufacturing nanostructural materials; thermal spraying; modeling and simulation
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. Mecartney: Electron microscopy, ceramics, interfacial engineering
Farghalli A. Mohamed: Mechanical properties, creep, superplasticity, correlations between property and microstructure
Andrew A. Shapiro *(Adjunct):* Electronic properties of materials; electronic packaging materials, processes, and characterization
Frank G. Shi: Semiconductor processing and dielectric; metal and polymer thin film materials; amorphous materials; nanoparticles and aerosols; theory and modeling
Chen S. Tsai: Integrated optic devices, circuits, materials; acoustic microscopy with applications to materials, device characterization

Materials Science and Engineering (MSE) 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, MSE 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 MSE 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 Materials Science and Engineering cover a wide spectrum, ranging from metals, optical and electronic materials to superconductive materials, ceramics, advanced composites, and biomaterials. In addition, the emerging new research and technological areas in materials are in many cases interdisciplinary. Accordingly, the principal objective of the graduate curriculum is to integrate a student's area of emphasis—whether it be 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 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 sufficiently covered in MSE courses that are listed below and that deal with the following topics:

Crystal Structure and Crystal Defects: MSE200 (Advanced Concepts in Materials).

Physical and Electrical Properties: MSE205 (Physical and Electric Properties of Engineering Materials).

Thermodynamics and Transport Phenomena: one course from MSE252A (Theory of Diffusion), MSE253 (Kinetic Phenomena in Materials), CBE280 (Fundamentals of Phase Transformation), or Chemistry 230 (Classical Mechanics and Electromagnetic Theory).

Processing of Materials: one course from ECE116 (Wafer Fabrication Processes), MSE255A (Design with Ceramic Materials), or MSE257B (Solidification Processes).

Electives

These electives represent courses in areas of emphasis. Typical examples for elective courses in various areas of emphasis are listed below.

Chemical Processing: CBE210 (Thermodynamics), CBE220 (Applied Chemical Engineering Mathematics), CBE230 (Transport), CBE260 (Reaction Engineering).

Electronic and Photonic Materials: ECE217A-B (Advanced Semiconductor Devices), ECE275A (Electro-optical Devices), ECE275B (Acoustic-Optics Devices), ECE279A, B (Advanced Engineering Electromagnetics I, II).

Mechanics of Solids: CEE242 (Advanced Strength of Materials), CEE243 (Mechanics of Composite Materials), CEE246 (Structural Performance and Failure), CEE281 (Finite Element Method in Continuum Mechanics).

Physics and Chemistry of Materials: Chemistry 213 (Chemical Kinetics), Chemistry 225 (Polymer Chemistry), Chemistry 230 (Classical Mechanics and Electromagnetic Theory), Chemistry 252 (Special Topics in Physical Chemistry), Physics 221 (Elasticity), Physics 239A (Plasma Physics), Mathematics 292A (Applied Mathematics).

Structural Materials: MSE210 (Materials Characterization Techniques and Analysis), MSE251 (Dislocation Theory), MSE255A (Design with Ceramic Materials), MSE255B (Science of Composite Materials), MSE256A (Fracture of Engineering Materials), MSE258 (Computer Techniques in Experimental Materials Research), MSE259A (Theory of Electron Microscopy), ME200B (Engineering Analysis).

It should be noted that specific course requirements within the areas of emphasis are decided based on consultation with the Director of the MSE concentration and the faculty advisor; that in selecting electives, students are encouraged to take courses which are not in their area of emphasis; and that MSE courses which are not selected to satisfy the core requirement can also serve as electives under the Structural Materials emphasis. Furthermore, students in the MSE concentration who are interested in an area of emphasis other than Structural Materials are urged to take one course which covers aspects related to mechanical behavior such as Dislocation Theory (MSE251) and Fracture of Engineering Materials (MSE256A).

MASTER OF SCIENCE DEGREE

A minimum of 36 units is required for the M.S. degree. Two options are available, a thesis option and a comprehensive examination option. For the thesis option, students are required to complete a research study of great depth and originality and obtain approval for a complete program of study. A committee of three full-time faculty members is appointed to guide development of the thesis. At least 21 units must be taken from courses numbered 200-289, among which 12 units are from MSE core courses and 9 units are in the area of emphasis approved by the faculty advisor and the graduate advisor. Up to eight units of MSE296, ECE296, CBE296, or CEE296 and up to eight units of undergraduate elective courses can be applied toward the 36-unit requirement. For the comprehensive examination option, students are required to complete 36 units of study. At least 24 units must be taken from courses numbered 200-289, among which 12 units are from MSE core courses and 12 units are in the 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 during the second year of the Ph.D. program, is based on the core courses in MSE and courses taken in the area of emphasis. The examination committee

is appointed by the MSE Director with subsequent approval by the School's Associate Dean of Graduate Studies. 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 Protein Engineering

145 Biological Sciences Administration; (949) 824-6686

The Henry Samueli 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 AND MATERIALS SCIENCE

916F Engineering Tower; (949) 824-3426
Enrique J. Lavernia, **Department Chair**

Faculty

Peggy Arps *(Adjunct):* Environmental molecular microbiology and biotechnology, chemistry and environmental engineering pertaining to industrial processes/products
Ying-Chih Chang: Biomolecular engineering, organic thin-film fabrication
Russell (Y. T.) Chou *(Adjunct):* Defect mechanics, grain boundaries
Nancy A. DaSilva: Molecular biotechnology, metabolic engineering, environmental biotechnology
James C. Earthman: Fatigue behavior and cyclic damage, automated materials testing, high-temperature fracture, biomaterials, cellular networks
Steven C. George: Physiological systems modeling, respiratory heat and mass transport, kinetics, computer simulation, tissue engineering
Stanley B. Grant: Environmental engineering, coagulation and filtration of colloidal contaminants, environmental microbiology
G. Wesley Hatfield: Molecular mechanisms of biological control systems
Juan Hong: Biochemical and separation processes, environmental engineering
Enrique J. Lavernia: Processing structural materials and composites, manufacturing nanostructural materials, thermal spraying, modeling and simulation, spray atomization and deposition
Henry C. Lim: Bioreaction and bioreactor engineering
Martha L. Mecartney: Sol-gel processing of oxide thin films for microelectronic applications, grain boundary engineering of ceramics
Farghalli A. Mohamed: Mechanical properties, creep, superplasticity, correlations between property and microstructure
Roger H. Rangel: Fluid mechanics, heat transfer of multiphase systems including spray combustion, atomization, and metal spray solidification; applied mathematics
Andrew A. Shapiro *(Adjunct):* Electronic properties of materials; electronic packaging materials, processes, and characterization
Frank G. Shi: Semiconductor processing and modeling, polymer thin films and nanoparticles
William A. Sirignano: Combustion theory and computational methods, multiphase flows, turbulent reacting flows
Vasan Venugopalan: Biomedical laser application, laser-induced transport phenomena

Lecturers

William C. Harrigan: Materials science
Scott Napp: Chemical and biochemical engineering

The Department of Chemical and Biochemical Engineering and Materials Science 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 161.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, two courses in engineering physics (with laboratory), one year of general chemistry, and one additional approved course for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact the Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN CHEMICAL ENGINEERING

Credit for at least 196 units including:

University Requirements: See pages 54–59.

School Requirements: See pages 161–162.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E (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 7A-B-D and 7LA-LB-LD (at least 58 units).

Basic Engineering Courses: Engineering MAE10 or CEE10 or ECE10, and E54 (8 units).

Chemical Engineering Core Courses: Engineering ChE40, ChE60, ChE120A-B, ChE120LA-LB, ChE122, ChE160, ChE162, ChE163 (43 units).

Technical Electives: 18 units (which must include 9 units of Engineering topics); all technical electives must be approved by the faculty advisor.

Specialization in Biochemical Engineering: requires ChE165 and a minimum of 9 units selected from ChE172, ChE180, ChE199 or ChEH199 (up to 4 units), CEE166, Biological Sciences 98, Biological Sciences 99, or Biological Sciences 128.

Specialization in Environmental Engineering: requires a minimum of 12 units selected from ChE170, ChE172, ChE199 or ChEH199 (up to 4 units), CEE164, 164L, CEE165, CEE166, CEE170B, CEE175, MAE110, MAE115, MAE164. At least one course from ChE170, ChE172, ChE199 or ChEH199 must be taken.

Specialization in Materials Science: requires a minimum of 12 units selected from: MSE149, MSE150 (requires MAE30, not counted toward total), MSE153, MSE155A, MSE156, ChE199 or ChEH199 (up to 4 units).

PLANNING A PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Chemical Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their faculty advisor. Chemical Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisors.

Sample Program of Study — Chemical Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
CEE10 or ECE10 or MAE10	Chemistry 1A, 1LA	Chemistry 1B, 1LB
Breadth	Breadth	
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Chemistry 1C	Chemistry 51A, 51LA	Chemistry 51B, 51LB
ChE40	E54	ChE60
Breadth	Breadth	
Junior		
Chemistry 130A or 131A	Chemistry 130B or 131B	Chemistry 130C or 131C
Chemistry 51C	ChE122	ChE120A
ChE160	Breadth	Breadth
Breadth	Breadth	Breadth
Senior		
ChE120B	ChE120LA	ChE120LB
Technical Elective	ChE163	ChE162
Breadth	Technical Elective	Technical Elective
Breadth	Technical Elective	

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 electronic materials and processing, polymers, composite materials, creep, fracture and fatigue, ceramics, and superplasticity.

MASTER OF SCIENCE DEGREE

Two plans are available for the M.S. degree: a thesis option and a comprehensive examination option. Opportunities are available for part-time study toward the M.S. degree.

Students who enter the program with a B.S. degree in chemical engineering must take at least six graduate-level courses (22 units), while students who enter without undergraduate preparation in chemical engineering are required to take three to five additional prerequisite courses (Mathematics 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: Comprehensive Examination Option

The comprehensive examination option requires a minimum of 36 quarter units in approved courses, at least 24 of which must be from graduate courses in the 200 series.

DOCTOR OF PHILOSOPHY DEGREE

The doctoral program is tailored to the individual needs and background of the student. The detailed program of study for each Ph.D. student is formulated in consultation with an advisory committee which takes into consideration the objectives and preparation of the candidate. The program of study must be approved by the faculty of the School.

There are no specific course requirements, but there are several milestones to be passed: acceptance into a research group by the faculty advisor, successful completion of the Ph.D. preliminary examination, formal advancement to candidacy 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 and Materials Science

UNDERGRADUATE

NOTE: The undergraduate courses listed below are open only to students in the Henry Samueli School of Engineering. All other majors must petition for permission to enroll.

CHEMICAL ENGINEERING

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, and Physics 7A, 7LA; Engineering CEE10, ECE10, or MAE10 (Design units: 0)

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: ChE40, Mathematics 2E; Engineering CEE10, ECE10, or MAE10. ChE60 and MAE91 may not both be taken for credit. (Design units: 1)

ChE120A Momentum Transfer (4) 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: ChE40, Mathematics 3D. (Design units: 1)

ChE120LA Chemical Engineering Laboratory I (4) 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. (Design units: 1)

ChE120B Heat and Mass Transfer (4) F. Macroscopic and differential energy balances. Heat transfer coefficients, convective and radiative heat transfer, applications to equipment design, macroscopic and differential species balances, mass transfer with and without chemical reactions, mass transfer equipment design. Prerequisite: ChE120A. (Design units: 1)

ChE120LB Chemical Engineering Laboratory II (4) S. Continuation of Engineering 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, ChE163. (Design units: 3)

ChE122 Separation Processes (4) W. Application of equilibria and mass and energy balances for design of separation processes. Use of equilibrium laws for design of distillation, absorption, stripping, and extraction equipment. Design of multicomponent separators. Prerequisite: ChE60. (Design units: 3)

ChE156 Advanced Laboratory in Chemistry and Synthesis of Materials (4) S. Lecture, two hours; laboratory, eight hours. Synthesis and characterization of organic and inorganic materials including polymers, oxides, metal alloys, electronic materials. Techniques include electron microscopy, solid-state NMR, gel permeation chromatography, photolithography, x-ray diffraction, porosity, and thermal analysis. Prerequisite: Engineering E54 or Chemistry 130A-B or 131A-B. Same as Chemistry 156. Engineering ChE156 and Engineering MSE159 may not both be taken for credit.

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, Engineering ChE60. (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, ChE160. (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, ChE160. (Design units: 1)

ChE165 Introduction to Biochemical Engineering (3). Application of engineering principles to biochemical processes. Topics include: microbial pathways, energetics and control systems, enzyme and microbial kinetics, and the design and analysis of biological reactors. Prerequisites: Chemistry 1C, Mathematics 3D, and Engineering ChE160 or consent of instructor. (Design units: 1)

ChE170 Pollution Control (3). 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. (Design units: 1)

ChE172 Introduction to Bioremediation (3) W. Introduction to the application of engineering and biological principles toward the remediation of hazardous wastes. Emphasis on genetically-engineered bacteria and biological reactors for degrading recalcitrant compounds. Prerequisite: ChE160. (Design units: 0)

ChE175 Introduction to Catalysis (3). 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 Chemistry 131A. (Design units: 0)

ChE180 Transport Phenomena in Living Systems (3). An introduction to transport phenomena in cellular and whole organ systems. Application of transport theory including advection and diffusion to the movement of molecules in biological systems, including the cardiovascular system (heart and microcirculation), and the lung. Prerequisite: ChE120A or consent of instructor. (Design units: 0)

ChE189 Microelectronics Processing (3). Presents a broad introduction to the applications of the fundamental chemical engineering principles (of chemical kinetics, reactor design, heat transfer, fluid mechanics, mass transfer, thermodynamics, and polymers) to the design, analysis, and modification of microelectronic fabrication processes. Prerequisites: ChE120A, ChE120B, ChE120LB, ChE160. (Design units: 0)

ChE198 Group Study (1 to 4) F, W, S, Summer. Group study of selected topics in engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. (Design units: varies)

ChE199 Individual Study (1 to 4) F, W, S, Summer. For undergraduate Engineering majors in supervised but independent readings, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

ChEH199 Individual Study for Honors Students (1 to 5) F, W, S. Supervised research in Chemical Engineering for participants in the Campuswide Honors Program. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. Open only to members of Campuswide Honors Program who are Chemical Engineering majors. May be repeated for credit as topics vary. (Design units: varies)

MATERIALS SCIENCE

MSE105 Materials Engineering Laboratory (4) S. 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: Engineering E54. (Design units: 0)

MSE112 Phase Transformations (3) W. Kinetics of nucleation, nucleation theory, isothermal transformation, martensitic transformation. Prerequisites: Engineering E54 and ChE60. (Design units: 0)

MSE149 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. Prerequisite: Engineering E54. (Design units: 1)

MSE150 Mechanics of Materials (4) 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: MAE30. Same as MAE150. MSE150 and CEE150 cannot both be taken for credit. (Design units: 1)

MSE153 Design Failure Investigation (4). Survey of the mechanisms by which mechanical devices may fail, including overload, fatigue, corrosion, and wear. Use of fractography and other evidence to interpret failure modes and specify design/manufacturing changes. Students redesign failed parts or structures based on actual parts and/or case histories. Prerequisite: MAE156. (Design units: 2)

MSE154 Introduction to Polymer Science (3) S. An introduction to organic and physical chemistry polymers, including synthetic methods, reaction mechanisms; configuration and conformation of polymer chains and characterization techniques; visoelasticity and rheology. Special topics in biopolymers and plymer surfaces. Prerequisite: Chemistry 51A-B-C or consent of instructor. Concurrent with MSE201. (Design units: 0)

MSE155A Composite Materials Design (4). 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; Engineering MSE150 or Engineering MAE150. (Design units: 3)

MSE155B Advanced Composites Design (4). 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: MSE155A. (Design units: 2)

MSE156 Mechanical Behavior and Design Principles (4) S. Principles governing structure and mechanical behavior of materials, relationship relating microstructure and mechanical response with application to elasticity, plasticity, yielding, necking, creep, fatigue, and fracture of materials. Introduction to experimental techniques to characterize the properties of materials. Design parameters. Prerequisites: E54, MSE150 or MAE150. Same as MAE156. (Design units: 2)

MSE157 Solidification Processing (3) W. Principles of control of structure, properties, and shape in process 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. Prerequisites: Engineering E54, MSE112, ChE60. Concurrent with MSE257B. (Design units: 1)

MSE159 Characterization of Materials (4) S. Lecture, two hours; laboratory, six hours. 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. Prerequisite: Engineering E54. Only one course from Engineering MSE159, Engineering ChE156, and Chemistry 156 may be taken for credit. (Design units: 0).

MSE160 Environmental Effects and Corrosion (4) F. Covers the principles of environmental degradation and corrosion including environmental effects, electrochemical aspects, eight forms of corrosion, corrosion testing, oxidation at elevated temperatures, susceptibilities of various engineering materials, and prevention of environmental degradation. Prerequisite: Engineering E54. (Design units: 2)

MSE162 Design with Materials (5) S. Group supervised senior design projects that deal with materials selection in engineering design and that involve case studies in ethics, safety, design, failure modes, new products, and patents. Activities conclude with a presentation of the products. Prerequisites: Engineering E54, MSE112, MSE150, MSE156, MSE157, and MSE159. (Design units: 5)

GRADUATE

CHEMICAL AND BIOCHEMICAL ENGINEERING

CBE209 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, Physiology 209.

CBE210 Chemical Engineering Thermodynamics (4) F. 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.

CBE220 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: ChE120A, ChE120B, and ChE160 or consent of instructor.

CBE222 Bioseparation Processes (3). Recovery and purification of biologically produced proteins and chemicals. Basic principles and engineering design of various separation processes including chromatography, electrophoresis, extraction, crystallization, and membrane separation. Prerequisite: ChE165 or consent of instructor.

CBE230 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. Prerequisites: ChE120A, ChE120B, or consent of instructor.

CBE235 Biomedical Photonics (3) F. Presentation of the biophysical principles governing the interaction of laser radiation with biological materials, cells, and tissues. The utilization of these principles in several biomedical therapeutic and diagnostic applications is also covered and discussed in detail. Prerequisite: ChE120A-B or consent of instructor.

CBE240 Bioengineering with Recombinant Microorganisms (3) W, 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.

CBE242 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. Prerequisite: ChE165, Molecular Biology and Biochemistry 203 and 204, or consent of instructor. Same as Physiology 242.

CBE250 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.

CBE260 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.

CBE262 Bioreactor Engineering (3). Modeling, optimization, and control of biological reactors. Statics and dynamics of bioreactors containing recombinant cells and multiple species. Prerequisite: consent of instructor.

CBE270 Bioremediation (3). 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.

CBE280 Fundamentals of Phase Transformations (3). 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.

CBE285 Modeling Biomedical Systems (3) W. Theoretical model building and testing. Emphasis on biomedical systems including, but not limited to, transport phenomena in physiological systems, biomedical systems, and bioelectronic systems; statistical methods for parameter specification; sensitivity analysis. Prerequisite: consent of instructor.

CBE295 Seminars in Engineering (1 to 4). Seminars scheduled each year by individual faculty in major field of interest. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

CBE296 Master of Science Thesis Research (4 to 12) 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.

CBE297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S. Individual research or investigation conducted in preparation for the dissertation required for the Ph.D. in Chemical and Biochemical Engineering. May be repeated for credit.

CBE298 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 Grading only. May be repeated for credit.

CBE299 Individual Research (varies) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit.

MATERIALS SCIENCE

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 7A, 7LA.

MSE201 Introduction to Polymer Science (3) S. An introduction to organic and physical chemistry polymers, including synthetic methods, reaction mechanisms; configuration and conformation of polymer chains and characterization techniques; visoelasticity and rheology. Special topics in biopolymers and plymer surfaces. Prerequisite: Chemistry 51A-B-C or consent of instructor. Concurrent with MSE154. (Design units: 0)

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), submicron optical techniques, and electromagnetic field-induced methods (STM, AFS). Prerequisites: Chemistry 1A-B-C, Physics 7A, 7LA.

MSE220 Analytical Methods in Materials Science (3). Selected topics in modern analysis and their application to material problems in such areas as thermodynamics, crystallography, deformation and fracture, diffusion, phase transformations. Prerequisite: consent of instructor.

MSE251 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: E54 or consent of instructor.

MSE252A 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: E54 or consent of instructor.

MSE252B Phase Transformations (3). Kinetics of nucleation, nucleation theory, isothermal transformation, martensitic transformation. Prerequisite: MSE252A.

MSE253 Kinetic Phenomena in Materials (3). Kinetic phenomena materials from a phenomenological viewpoint. Diffusion, chemical kinetics, particle-fluid interactions, adsorption, evaporation, statistical thermodynamics, kinetics of phase transformations, and spinodal decomposition.

MSE254A Mechanical Behavior of Engineering Materials (3). 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: E54.

MSE254B Plasticity and Metal Forming (3). Stress and strain analysis, plasticity equations, yielding, integration of plasticity equations, plastic instability, application of plasticity theory to some forming processes. Prerequisite: E54, MAE30, or consent of instructor.

MSE255A Design with Ceramic Materials (3). Dependence of ceramic properties on bonding, crystal structure, defects, and microstructure. Ceramic manufacturing technology. Survey of physical properties. Strength, deformation, and fracture of ceramics. Mechanical design with brittle, environment-sensitive materials exhibiting time-dependent strengths. Prerequisite: E54.

MSE255B Science of Composite Materials (3). 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; MAE150 or MSE150; or consent of instructor.

MSE256A Fracture of Engineering Materials (3). Fracture mechanics and its application to engineering materials. Elastic properties of cracks, the stress intensity factor, the crack tip plastic zone, the J Integral approach, fracture toughness testing, the crack tip opening displacement, fracture at high temperatures, fatigue crack growth. Prerequisite: MAE156 or MSE156; or MSE254A or consent of instructor.

MSE256B Fatigue of Engineering Materials (3). 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: MSE256A; or MAE156 or MSE156; or equivalent.

MSE257A Rapid Solidification (3). 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.

MSE257B Solidification Processing (3) W. Principles of control of structure, properties, and shape in process 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. Prerequisites: Engineering E54, MSE112, ChE60.

MSE257C Recent Developments in Advanced Materials (3). 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.

MSE258 Computer Techniques in Experimental Materials Research (3). Principles and practical guidelines of automated materials testing. Computer fundamentals, programming languages, data acquisition and control hardware, interfacint techniques, programming strategies, data analysis, data storage, safeguard procedures. Prerequisite: E54 or consent of instructor.

MSE259A Theory of Electron Microscopy (3). 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).

MSE259B Applied Analytical Transmission Electron Microscopy (3). 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: MSE259A.

MSE260 Structure and Characterization of Materials (3). 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.

MSE261 High-Temperature Deformation of Engineering Materials (3). Theoretical and practical aspects of creep and superplasticity in metallic and non-metallic systems are presented. Topics include: creep testing methods, diffusional creep, deformation mechanism maps, and superplasticity in non-metallics. Prerequisites: Engineering E54; MAE156 or MSE156; or consent of instructor.

MSE295 Seminar in Engineering (1 to 4) F, W, S, Summer. Seminars by individual faculty in major fields of interest. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

MSE296 Master of Science Thesis Research (4 to 12) F, W, S, Summer. Individual research or investigation conducted in preparation for a thesis required for the M.S. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

MSE297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S, Summer. 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.

MSE298 Seminars in Materials Science Engineering (1) F, W, S, Summer. Presentation of advanced topics and reports of current research efforts in Materials Science Engineering. Required of all graduate students in Materials Science Engineering. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

MSE299 Individual Research (4 to 12) F, W, S, Summer. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit.

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

E4150 Engineering Gateway; (949) 824-5333
Stephen G. Ritchie, **Department Chair**

Faculty

Alfredo H.-S. Ang: Structural and earthquake engineering, risk and reliability engineering
Constantinos V. Chrysikopoulos: Subsurface solute transport, nonaqueous phase liquid dissolution in porous media, mathematical modeling
Maria Q. Feng: Structural engineering and intelligent control of structural systems
Stanley B. Grant: Environmental engineering, coagulation and filtration of colloidal contaminants, environmental microbiology
Gary L. Guymon: Water resources, groundwater, modeling uncertainty
Medhat A. Haroun: Numerical and experimental modeling of the seismic behavior of structural systems for the design and retrofit of liquid storage tanks, bridge-supporting elements, and buildings
R. (Jay) Jayakrishnan: Transportation systems analysis
Michael G. McNally: Travel behavior, transportation systems analysis
Gerard C. Pardoen: Structural analysis, experimental structural dynamics
Amelia C. Regan: Logistics, freight and fleet management, intermodal transportation systems
Wilfred W. Recker: Transportation systems modeling, traffic control, and urban systems analysis
Stephen G. Ritchie: Transportation engineering advanced traffic management and control systems, development and application of emerging technologies in transportation
Brett F. Sanders: Environmental and computational fluid dynamics, water resources engineering
Jan Scherfig: Water reclamation, waste treatment processes, environmental engineering
Robin Shepherd: Structural dynamics, earthquake-resistant design
Roberto Villaverde: Structural dynamics and earthquake engineering
Jann N. Yang: Structural control, earthquake engineering, structural dynamics, fatigue, reliability and maintainability

Lecturers

Shawn R. Akins: Computer-aided geometric design
Paul Bopp: Geotechnical engineering and geology
L. James Ewing, Jr.: Water and wastewater systems, reclamation and reuse
Bijan Hagh: Structures
Ying-Keung Poon: Water resources
Adham Refaat: Structures
Abdul Salim: 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 Structural, Transportation, and Water Resources and Environmental 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 161.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of engineering physics (with laboratory), and three additional approved courses for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact the Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN CIVIL ENGINEERING

Credit for at least 188 units including:

University Requirements: See pages 54–59.

School Requirements: See pages 161–162.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E (24 units).

Basic Science Courses: Chemistry 1A and 1LA, Physics 7A-B and 7LA-LB, and either Option 1 or 2.

Option 1: Physics 7D and 7LD *plus* one course from Physics 7E, or Chemistry 1B and 1LB, or Biological Sciences 94, or Earth System Science 10, 14, 15, 20E, 20F, 101A-B-C, or courses from an approved list (at least 24 units), *or*

Option 2: Chemistry 1B-C and 1LB (at least 25 units).

Basic Engineering Courses: Engineering CEE10 or ECE10, CEE11, ECE20, CEE30 or MAE30, CEE80 or MAE80, CEE81A-B (24 units).

Civil Engineering Core Courses: Engineering CEE110, CEE111, CEE121, CEE130 and 130L, CEE150 and 150L, CEE151A-B-C, CEE161, CEE170 or MAE130A, CEE171, CEE181A-B-C, and one from CEE122, CEE152, CEE162, or CEE 172 (55 units).

Technical Electives: 16–24 units in one of the five specializations.

Specialization in General Civil Engineering: Requires remaining three of CEE122, CEE152, CEE162, CEE172, plus a Civil Engineering technical elective from CEE52, CEE55, and other courses from an approved list (16 units).

Specialization in Environmental Engineering: Requires Science Option 2 and CEE162 as the Civil Engineering core elective, and ChE40, ChE60 or MAE91, ChE160 or CEE163 or CEE165, and CEE172 (16–18 units).

Specialization in Structural Engineering: Requires four courses from CEE152, CEE153, CEE154, CEE155, CEE156, and CEE157 (16 units).

Specialization in Transportation Information and Control Systems: Requires CEE122 as the Civil Engineering core elective and four courses selected from CEE123, ECE40, ECE72, MAE140, MAE170, MAE171, or courses from an approved list (16 units).

Specialization in Water Resource Engineering: Requires CEE172 as the Civil Engineering core elective, and CEE162, CEE174, CEE178, MAE140, and MAE170 (18 units).

In addition, students must aggregate a minimum of 24 design units. Design unit values are indicated at the end of each course description. The faculty advisors and the Student Affairs Office can provide necessary guidance for satisfying the design requirements.

At most an aggregate total of 6 units of 199 or H199 courses may be used to satisfy degree requirements.

PROGRAM OF STUDY

Sample Program of Study — Civil Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD or Chemistry 1B, 1LB
CEE10 or ECE10 or MAE10	Chemistry 1A, 1LA	ECE20
Breadth	Breadth	Breadth
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Science Elective or Chemistry 1C	CEE81A	CEE81B
CEE30 or MAE30	CEE80 or MAE80	CEE11
Breadth	Breadth	Breadth
Junior		
CEE150, 150L	CEE151A	CEE151B
CEE170 or MAE130A	CEE171	CEE161
CEE121	CEE130, 130L	CEE110
Breadth	Breadth	Breadth

The following sample plans of study are provided for the senior year only; the first three years are common to all specializations (although the Environmental Engineering specialization requires that Science Option 2 be selected).

Senior-Year Sample Programs of Study — Civil Engineering

FALL	WINTER	SPRING
Senior: General Civil Engineering Specialization		
CEE181A	CEE181B	CEE181C
CEE151C	CEE111	CEE152
CEE172	CEE122	Spec. Elective
Breadth	CEE162	Breadth
Senior: Environmental Engineering Specialization*		
CEE181A	CEE181B	CEE181C
CEE151C	CEE111	CEE163 or 165
ChE40	CEE162	ChE60 or MAE91
CEE172	Breadth	Breadth
* Also requires completion of Science Option 2.		
Senior: Structural Engineering Specialization		
CEE181A	CEE181B	CEE181C
CEE151C	CEE111	CEE152
CEE157	CEE154	CEE153 or 156
Breadth	CEE155	Breadth
Senior: Transportation Information and Control Systems Specialization		
CEE181A	CEE181B	CEE181C
CEE151C	CEE111	CEE123
MAE140	CEE122	MAE170
Breadth	Breadth	ECE40
Senior: Water Resource Engineering Specialization		
CEE181A	CEE181B	CEE181C
CEE151C	CEE111	MAE170
MAE140	CEE162	Breadth
CEE172	CEE174	Breadth
CEE178		

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

The sample program of study chart shown is typical for the accredited major in Civil Engineering. Students should keep in mind that this program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. (Students who select the Environmental Engineering specialization within the Civil Engineering major should follow the Civil Engineering sample program.)

Students must have their programs approved by their faculty advisor. Civil Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisors.

Undergraduate Major in Environmental Engineering

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, chemistry, and biology, as well as engineering mechanics and methods courses. Students may select from a variety of environmental engineering courses to fulfill the remaining portion of the program and to focus their environmental engineering training in one or more of the following areas: water resources engineering, water and wastewater treatment engineering, air pollution control engineering, or pollution prevention engineering. Design experiences are integrated into environmental engineering courses, and seniors enroll in a capstone design course.

ADMISSIONS

High School Students: See page 161.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, two courses in engineering physics (with laboratory), one year of general chemistry, and one additional approved course for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact the Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN ENVIRONMENTAL ENGINEERING

Credit for at least 193 units including:

University Requirements: See pages 54–59.

School Requirements: See pages 161–162.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E (24 units).

Basic Science Courses: Physics 7A-B and 7LA-LB, Chemistry 1A-B-C and 1LA-LB, Chemistry 51A and 51LA, and Biological Sciences 94 (at least 36 units).

Basic Engineering Courses: Engineering CEE10 or ECE10 or MAE10, CEE11, CEE30 or MAE30, CEE80 or MAE80, CEE110, CEE130 and CEE130L, CEE150 and CEE150L or MAE 150, CEE170 or MAE130A or ChE120A, ChE60 or MAE91 (37–39 units).

Environmental Engineering Core Courses: Engineering CEE81A-B or MAE52, CEE161, CEE171, CEE181A-B-C or MAE189A-B-C or ChE162, and ChE40 (20–22 units).

Environmental Technical Electives: Seven of the following environmental science and engineering courses must be taken: CEE111, CEE162 or Earth System Science 102, CEE163, CEE165, CEE172, CEE173 (requires MAE140, not counted as one of seven electives), CEE176, CEE178, MAE110, MAE162, MAE164, ChE160, ChE170; Biological Sciences 96; 178 or 179; Environmental Analysis and Design E178, E185; Earth System Science 108, 109, 110, 112, 160 (up to 28 units).

In addition, students must aggregate a minimum of 24 design units. Design unit values are indicated at the end of each course description. The faculty advisors and the Student Affairs Office can provide necessary guidance for satisfying the design requirements.

At most an aggregate total of 6 units of 199 or H199 courses may be used to satisfy degree requirements.

PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Environmental Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Environmental Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisors.

Sample Program of Study — Environmental Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Physics 7A, 7LA	Physics 7B, 7LB	Chemistry 1B, 1LB
CEE10 or MAE10 or ECE10	Chemistry 1A, 1LA	Breadth
Breadth	Breadth	Breadth
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Chemistry 1C, 1LC	Chemistry 51A, 51LA	CEE81B or MAE52
CEE30 or MAE30	CEE80 or MAE80	CEE11
Breadth	CEE81A or MAE52	Breadth
Junior		
CEE150, 150L or MAE150 or MSE150	Biological Sciences 94	MAE91 or ChE60
CEE170 or MAE130A or ChE120A	CEE171	CEE161
ChE40	Technical Elective	CEE110
Breadth	Breadth	Breadth
Senior		
CEE181A or MAE189A or ChE162	CEE181B or MAE189B or ChE162	CEE181C or MAE189C or ChE162
Technical Elective	Technical Elective	Technical Elective
Technical Elective	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 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 a faculty advisor who takes into consideration the objectives and preparation of the candidate. The program of study must be approved by the faculty advisor and the Graduate Advisor of the Department.

There are no specific course requirements. Within this flexible framework, the School maintains specific guidelines that outline the milestones of a typical doctoral program. All doctoral students should consult the Civil Engineering program's guidelines for details, but there are several milestones to be passed: admission to the Ph.D. program by the faculty; early assessment of the student's research potential (this includes a preliminary examination), research preparation, formal advancement to candidacy by passing the qualifying examination, completion of a significant research investigation, and the submission and oral defense of an acceptable dissertation. There is no foreign language requirement. Ph.D. students have to meet departmental research requirements as a research assistant or equivalent, with or without salary. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies. For at least the final two years of the doctoral program it is expected that the student will be a full-time resident in the School. Doctoral programs must be completed in seven calendar years from the date of admission.

THE INSTITUTE OF TRANSPORTATION STUDIES

The Institute of Transportation Studies at Irvine (ITS) 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 and Environmental Engineering

LOWER-DIVISION

NOTE: The undergraduate courses listed below are open only to students in the Henry Samueli School of Engineering. All other majors must petition for permission to enroll.

CEE10 Methods I: Computation Methods in Civil and Environmental Engineering (4) F. Introduction to engineering analysis, design, and problem solving from a computational perspective. Fundamentals of computers and structured programming. Develop initial design and programming skills using a high-level programming language (primarily C++ with a brief introduction to FORTRAN). Corequisite or prerequisite: Mathematics 2A. Only one course from Engineering CEE10, E10, ECE10, and MAE10 may be taken for credit. (Design units: 1)

CEE11 Methods II: Probability and Statistics (4) S. Modeling and analysis of engineering problems under uncertainty. Engineering applications of probability and statistical concepts and methods. Prerequisites: CEE10; Mathematics 2J or 3A. Formerly CEE105. (Design units: 1)

CEE30 Statics (4) F. Addition and resolution of forces, distributed forces, equivalent system of forces centroids, first moments, moments and products on inertia, equilibrium of rigid bodies, trusses, beams, cables. Corequisite or prerequisite: Mathematics 2D. Prerequisite: Physics 7A. CEE30 and MAE30 may not both be taken for credit. (Design units: 0)

CEE52 Graphics Communication and Computer-Aided Design (4) S. 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: CEE10. Formerly CEE1. (Design units: 1)

CEE55 Land Measurements and Analysis (4) F. Introduction to surveying and land measurements. Use of the level and transit equipment, legal descriptions, subdivisions, topographic surveys, mapping vertical and horizontal curves. Analysis of surveying field data using manual methods, computer programs, and the COGO software system. Prerequisite: CEE10. Formerly CEE5. (Design units: 0)

CEE80 Dynamics (3) W. Rigid body dynamics, momentum, and energy principles; modeling and analysis of mechanical systems. Prerequisites: CEE30 or MAE30. Only one course from CEE80, E80, and MAE80 may be taken for credit. (Design units: 0.5)

CEE81A Civil Engineering Practicum I (2) W. Introduction to civil engineering systems through presentations and actual design graphics. Examples of such graphics include designs of structural, environmental, and transportation systems. Introduction to visualization and communication of design concepts. Fundamentals of two-dimensional CAD using AutoCAD. Prerequisite: CEE10. (Design units: 1)

CEE81B Civil Engineering Practicum II (2) S. Introduction to state-of-the-art and future areas of the profession, including applications of advanced technology and computers. Presents information and control technology, smart materials, structures, transportation and environmental systems. Use of Geographic Information Systems with CAD for geomatics, land-surveys, design. Prerequisite: CEE81A. (Design units: 1)

UPPER-DIVISION

CEE110 Methods III: Modeling, Economics, and Management (4) S. Analysis, modeling and management of civil engineering systems. Topics include: statistics and system performance studies, probabilistic models and simulation, basic economics and capital investments, project elements and organization, managerial concepts and network technique, project scheduling. Emphasis on real-world examples. Prerequisites: CEE11. Formerly CEE115. (Design units: 1)

CEE111 Methods IV: Systems Analysis and Decision-Making (4) W. Analysis and optimization for decision-making in civil and infrastructural systems. Topics include: linear programming formulations and solution algorithms, network models, and logistical models. Emphasis is on project-level and managerial decision-making and selection from alternative designs. Prerequisite: CEE110. Formerly CEE15. (Design units: 1)

CEE112 Construction Management and Control (4) W. Project definition, scheduling and control; material, labor, and equipment allocation; cost analysis; project organization, documentation, and reporting. (Design units: 1)

CEE121 Transportation Systems I: Analysis and Design (4) F. Introduction to analysis and design of fundamental transportation system components, basic elements of geometric and pavement design, vehicle flow and elementary traffic, basic foundations of transportation planning and forecasting. Prerequisites: CEE10 and CEE81B. Formerly CEE125. (Design units: 2)

CEE122 Transportation Systems II: Operations and Control (4) W. Introduction to fundamentals of urban traffic engineering, including data collection, analysis, and design. Traffic engineering studies, traffic flow theory, traffic control devices, traffic signals, capacity and level of service analysis of freeways and urban streets. Prerequisites: CEE11, CEE121. Formerly CEE127. (Design units: 2)

CEE123 Transportation Systems III: Planning and Forecasting (4) S. Theoretical foundations of transportation planning, design, and analysis methods. Theory and application of aggregate and disaggregate models for land use development, trip generation, and destination, mode, and route choice. Transporation network analysis. Planning, design, and evaluation of system alternatives. Prerequisites: CEE11, CEE121. Formerly CEE126. (Design units: 2)

CEE130 Soil Mechanics (3) W. Mechanics of soils, composition and classification of soils, compaction, compressibility and consolidation, shear strength, seepage, bearing capacity, lateral earth pressure, retaining walls, piles. Prerequisites: CEE150, CEE170. Formerly CEE131. (Design units: 0)

CEE130L Soil Mechanics Laboratory (2) W. Laboratory procedures of soil testing for engineering problems. Corequisite: CEE130. Formerly CEE131L. (Design units: 0)

CEE132 Geology for Engineers and Scientists (4) F. 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 7B; upper-division standing. Formerly CEE130. (Design units: 0)

CEE150 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: CEE150L. Prerequisite: CEE30. Only one course from CEE150, MAE150 and MSE150 may be taken for credit. (Design units: 0)

CEE150L Mechanics of Materials Laboratory (1) F. Experimental methods and fundamentals for mechanics of materials analysis. Corequisites: CEE150. Prerequisite: CEE30. (Design units: 0)

CEE151A Structural Analysis (5) W. Fundamentals of structural analysis. Strain energy and virtual work. Deformation of statically determinate structures. Influence lines. Fundamentals of indeterminate analysis. Software for structural analysis. Prerequisite: CEE150. (Design units: 0)

CEE151B Structural Design I (4) S. Structural systems. Loads: dead, live, wind, and seismic. Design of timber structures. Beams, columns, beam-columns, roof, and connections. Prerequisite: CEE151A. (Design units: 4)

CEE151C Structural Design II (4) F. Ultimate strength design. Design of reinforced concrete beam sections. Design for shear and deflection. Design of columns. Design of isolated and combined footings. Prerequisites: CEE130; CEE151B. (Design units: 4)

CEE152 Computer Methods in Structural Analysis and Design (4) S. Matrix techniques for indeterminate framed structures. Computer implementation using the stiffness method. Fundamentals of structural dynamics and computer analysis for frequencies and modes. Software packages for design of reinforced concrete, steel, and timber structures. Prerequisite: CEE151C. (Design units: 2)

CEE153 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: CEE151A. Formerly CEE151B. (Design units: 0)

CEE154 Reinforced Concrete Design (4) W. Advanced design of RC beam sections. Design of two-way slabs. Design of short and slender columns. Interaction diagrams. Shear walls. Implementation of the concept of ductility in seismic design of concrete structures. Prerequisite: CEE151C. (Design units: 4)

CEE155 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: CEE151B. (Design units: 4)

CEE156 Foundation Design (4) S. Applications of soil mechanics principles to the analysis and design of shallow foundations, retaining walls, pile foundations, and braced cuts. Design criteria: bearing capacity, working loads and tolerable settlements, structural integrity of the foundation element. Damage from construction operations. Prerequisites: CEE130, CEE151C. Formerly CEE132. (Design units: 3)

CEE157 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: CEE150 or Engineering MAE150. Same as Engineering MAE157. (Design units: 2)

CEE161 Water and Wastewater Treatment (4) S. Water quality parameters. Water use, reclamation, and reuse. Introduction to modeling and designing of treatment systems. Extensive use of mass balances for system evaluation. Comprehensive group design project. Prerequisites: Chemistry 1A; Engineering CEE11; MAE130A or CEE170. (Design units: 3)

CEE162 Introduction to Environmental Chemistry (4) W. Basic concepts from general, physical, and analytical chemistry as they relate to environmental engineering. Particular emphasis on the fundamentals of equilibrium and kinetics as they apply to acid-base chemistry, mineral, and gas solubility, aerosol formation, and redox reactions. Prerequisites: Chemistry 1A; Engineering ChE60 or MAE91. (Design units: 0)

CEE163 Biological Treatment Processes (3) S. Fundamentals and analysis of natural biological processes in the aquatic environment. Design of biological treatment processes with emphasis on suspended growth systems, gas transfer, disinfection. Topics include aerobic and anaerobic treatment systems, biodegradation of contaminants in the environment. Design projects included. Prerequisites: CEE161, CEE162. (Design units: 2)

CEE164 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: CEE164L. Prerequisites: Chemistry 1C; Engineering CEE91 or ChE60. (Design units: 0)

CEE164L Chemistry Laboratory for Environmental Engineering (1) F. Experimental methods and fundamentals for environmental chemical analysis. Corequisite: CEE164. Prerequisites: Chemistry 1C; Engineering CEE 91 or ChE60. (Design units: 0)

CEE165 Physical-Chemical Treatment Processes (4) S. 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: CEE161, CEE162, or consent of instructor. (Design units: 2)

CEE170 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 7A and Mathematics 3D; Engineering CEE80 or E80 or MAE80. Engineering CEE170 and MAE130A may not both be taken for credit. Formerly CEE170A. (Design units: 0)

CEE171 Infrastructure Hydraulics (4) W. Continuity, energy, and momentum principles applied to flow in closed conduit and open channel infrastructure. Analysis of hydraulic networks. Deterministic and probabilistic factors affecting hydraulic design. Hydrologic design protocols for hydraulic systems. Prerequisites: CEE11; CEE170 or MAE130A. (Design units: 2)

CEE172 Groundwater Hydrology (4) F. Topics include conservation of fluid mass, storage properties of porous media, matrix compressibility, boundary conditions, flow nets, well hydraulics, groundwater chemistry, and solute transport. Design projects and computer applications included. Prerequisites: CEE170 or MAE130A or consent of instructor. (Design units: 2)

CEE174 Transport Phenomena in Porous Media (3) W. Fundamental solute and particle transport in saturated porous media. Development of macroscopic transport equations. Mathematics of diffusion. Effective macroscopic coefficients. Dissolution of nonaqueous phase liquids. Applied mathematical modeling techniques, including Laplace and Fourier transforms and particle tracking solutions. Prerequisite: CEE172 or MAE140 or consent of instructor. (Design units: 0)

CEE176 Surface Water Hydrology (3) S. Analysis of elements in the hydrologic cycle including precipitation, infiltration, and runoff. Frequency analysis of hydrologic phenomena. Consideration of precipitation/runoff relationships. Unit hydrograph theory. Hydrologic and hydraulic routing methods. Stochastic methods in hydrology. Prerequisite: CEE171. (Design units: 2)

CEE178 River and Estuarine Flow (3) F. Continuity, momentum, and energy principles applied to open channels. Flow control. Steady and unsteady flow. Flow resistance. Shallow-water wave theory.Flood waves in rivers and tidal oscillations in coastal wetlands. Computational techniques for flow modeling. Prerequisite: CEE171. (Design units: 1)

CEE181A Senior Design Practicum I (1) F. First phase in a team project designing a land development project including all infrastructural, environmental, and circulation aspects. Preliminary functional planning and infrastructure design (structures, water, transportation facilities) and scheduling of the design effort, assignment of responsibilities, preparation of a project proposal. Corequisite or prerequisite: CEE121. Prerequisites: CEE81B, CEE110. (Design units: 1)

CEE181B Senior Design Practicum II (2) W. Second phase involves component designs subject to interim design review panel feedback. A focus on traffic impact studies, design of road layouts, geometry, and signals, geotechnical and hydrological analysis, design of structural elements, economic analysis. Preparation of interim design report. Corequisite or prerequisite: CEE171. Prerequisites: CEE151C, CEE181A. (Design units: 2)

CEE181C Senior Design Practicum III (2) S. the third phase involves design of additional facilities and final design integration for the full development. Capacity analysis of structural, transportation, and water facilities. Environmental impact analysis. Visualization of aesthetic and functional characteristic. Construction management plans. Corequisite or prerequisite: CEE161. Prerequisite: CEE181B (must be taken same academic year). (Design units: 2)

CEE185 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. Prerequisites: Mathematics 3D; Engineering CEE10 or ECE10 or MAE10. Only one course from Engineering CEE185, Engineering MAE185, and Mathematics 105A may be taken for credit. (Design units: 0)

CEE198 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 as topics vary. (Design units: varies)

CEE199 Individual Study (1 to 4) F, W, S. For undergraduate Engineering majors in supervised but independent reading, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. (Design units: varies)

CEEH199 Individual Study for Honors Students (1 to 5) F, W, S. Independent reading, research, or design under the direction of a faculty member or group of faculty members in Civil Engineering. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Open only to members of the Campuswide Honors Program who are Civil or Environmental Engineering students. May be repeated for credit as topics vary. (Design units: varies)

GRADUATE

CEE220A Travel Demand Analysis I (3) W. Fundamentals of transportation systems analysis. Theoretical aspects of travel demand. Travel behavior. Modeling of performance characteristics and costs of transportation modes. In-depth presentation of travel demand modeling techniques. Development of travel choice models including mode, route, and destination choice. Equilibration. Prerequisite: knowledge of probability and statistics.

CEE220B Travel Demand Analysis II (3) S. Methods of discrete choice analysis and their applications in the modeling of transportation systems. Emphasis on the development of a sound understanding of theoretical aspects of discrete choice modeling that are useful in many applications in travel demand analysis. Prerequisite: CEE220A.

CEE221A Transportation Systems Analysis I (3) F. Introduction to mathematical methods and models to address logistics and urban transportation problems. Techniques include stochastic models, queueing theory, linear programming, and introductory non-linear optimization. Prerequisite: basic knowledge of probability theory.

CEE221B Transportation Systems Analysis II (3) S. Advanced mathematical methods and models to address logistics and urban transportation problems. Topics include network flows, advanced optimization techniques, dynamic network models, and geometric models. Prerequisites: CEE221A; graduate standing or consent of instructor.

CEE222 Transit Systems Planning (3) F. Planning methods for public transportation in urban areas. Technological and operating characteristics of vehicles, facilities, and systems. Short-range planning techniques: data collection and analysis, demand analysis, mode choice, operational strategies, financial analysis. Design of systems to improve performance.

CEE223A 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.

CEE223B 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 CEE223A, or consent of instructor.

CEE224A 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.

CEE224B Transportation Data Analysis II (3) W. 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: CEE224A or equivalent.

CEE225A Transportation Planning Models I (3) S. 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.

CEE225B Transportation Planning Models II (3) S. Design and application of comprehensive transportation models. Network development, demand modeling, and equilibrium assignment. Model calibration, validation, prediction, and evaluation. Regional modeling, site impact analysis, and circulation studies. Design of transportation alternatives. Prerequisites: CEE126 or the equivalent; graduate standing or consent of instructor.

CEE226A Traffic Flow Theory I (3) F. Traffic measurement and fundamental speed-density-flow relationships. Kinematic models. Shock waves. Statistical-kinetic theory of traffic. Introductory car-following principles and stability. Gap acceptance. Platoon dispersion. Two-fluid model. Queueing processes. Multi-regime and catastrophe models. Higher-order continuum models. Microscopic and macroscopic simulation. Prerequisites: knowledge of basic probability and statistics; graduate standing or consent of instructor.

CEE226B Traffic Flow Theory II (3) 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: CEE226A; graduate standing or consent of instructor.

CEE227A Transportation Logistics I: Introduction to Logistics and Supply Chain Management (3) W. Logistic network configuration, inventory management and risk pooling, the value of information, distribution strategies, international supply chain management, coordinated product and supply chain management, customer value and supply chain management, information technology, decision support systems. Prerequisite: graduate standing or consent of instructor.

CEE227B Transportation Logistics II (3) S. Optimization applied to freight network modeling. Freight and fleet management including: inventory modeling and planning, and vehicle routing and scheduling under deterministic and stochastic demand. Prerequisite: graduate standing. Formerly CEE227A.

CEE227C Transportation Logistics III (3) W. Facility location and routing. Optimization in location analysis, distribution system design, siting for emergency and non-emergency services, location routing with uncertainty, hazardous materials logistics. Prerequisite: graduate standing. Formerly CEE227B.

CEE228A Urban Transportation Networks I (3) S. Analytical approaches and algorithms to the formulation and solution of the equilibrium assignment problem for transportation networks. Emphasis on user equilibrium (USE), comparison with system optimal, mathematical programming formulation, supply functions, estimation. Estimating origin-destination matrices, network design problems. Prerequisite: CEE220A or equivalent.

CEE228B Urban Transportation Networks II (3). Advanced analysis, optimization, and modeling of transportation networks. Topics include advanced static and dynamic traffic assignment algorithms, linear and nonlinear multicommodity network flow optimization, network simplex, and network control problems. Prerequisites: CEE221A, CEE228A.

CEE229A 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. Prerequisite: CEE226A or CEE127.

CEE229B Traffic Systems Operations and Control II (3) S. 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: CEE229A; graduate standing or consent of instructor.

CEE231 Foundation Engineering (3) W. Essentials for design and analysis of structural members that transmit superstructure loads to the ground. Topics include subsurface investigations, excavation, dewatering, bracing, footings, mat foundations, piles and pile foundations, caissons and cofferdams, other special foundations. Prerequisite: CEE131 or equivalent.

CEE232 Soil Dynamics (3) S. 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: CEE131, CEE247.

CEE241 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. Prerequisites: CEE247.

CEE242 Advanced Strength of Materials (3) W. Beams on elastic foundations. Combined axial and lateral loads. Curved beams. Unsymmetric bending. Shear center. Stresses and strains. Basic equations for theory of elasticity. Energy principles. Theory of torsion. Combined bending and torsion.

CEE243 Mechanics of Composite Materials (3) S. Stress-strain relationship for orthotropic materials; invariant properties of an orthotropic lamina; biaxial strength theory for an orthotropic lamina; mechanics of materials approach to stiffness; elasticity approach to stiffness; classical lamination theory; strength of laminates; statistical theory of fatigue damage. Prerequisite: consent of instructor.

CEE245 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: CEE247 or equivalent.

CEE246 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.

CEE247 Structural Dynamics (3) F. Vibration of discrete and continuous mass elastic systems. Isolation and transmissibility. Dynamic recording instruments. Introduction to nonlinear theory of vibration. Response of structures to earthquake, traffic, and wind loads. Response spectra concepts. Normal mode analysis. Numerical integration techniques. Prerequisite: CEE80 or consent of instructor.

CEE248 Wind Engineering (3) S. 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: CEE105 or equivalent, CEE247 or equivalent.

CEE249 Earthquake Engineering (3) W. Earthquake magnitude, intensity, and frequency. Seismic damage to structures. Earthquake load prediction including response spectra, normal mode, and direct integration techniques. The basis of building code earthquake load requirements for buildings. Seismic response of special structures. Lifeline engineering. Prerequisite: consent of instructor.

CEE250 Finite Element Method in Structural Engineering (3) 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.

CEE251 Dynamics of Fluid/Structures Systems (3). Fundamentals of structural dynamics (time and frequency domains), fluid mechanics (potential flow and hydrodynamic forces), and numerical methods (finite elements and boundary solutions). Formulation of the general interaction problem with applications to ground-based and elevated tanks, dams, and off-shore structures. Prerequisite: consent of instructor.

CEE252 Nonlinear Structural Analysis (3). Elements of plasticity theory. Plastic hinge analysis under static loads. Characteristic nonlinear load-deformation curves. Load-deformation models. Simplified nonlinear beam-element models. Dynamic response by step-by-step methods. Axial-load bending moment interaction in flexual members. Methods for analysis of geometrically nonlinear systems. Prerequisites: CEE151B, CEE247.

CEE253 Plates and Shells (3) S. 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.

CEE254 Advanced Reinforced Concrete Behavior and Design (3) F. Flexural strength of reinforced concrete elements. Flexural ductility of unconfined and confined members with axial loads. Shear and torsional behaviors. Strength of reinforced concrete ductile frames and shear walls. Reinforced concrete detailing. Prerequisite: consent of instructor.

CEE255 Advanced Behavior and Design of Steel Structures (3) F. Advanced principles of structural steel design. Analysis and design of beam-column members, braced and unbraced frames for buildings, and plate girders. Review of seismic design provisions. Design of connections. Prerequisite: consent of instructor.

CEE256 Seismic Bridge Engineering (3) S. Seismic design philosophy for bridges. Fundamentals of structural dynamics, seismicity, and geotechnical aspects. Ductility. Modeling and design of components: superstructures, bents, foundations, abutments, and restrainers. Isolation and dissipation devices. Retrofit design: column jacketing, superstructure, and foundation.

CEE257 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.

CEE258 Earthquake-Resistant Structural Design (3) S. Objectives of seismic design. Cyclic load-distortion characteristics of typical structural elements. Desirable structural form. Ductility and methods of achieving it. Use of energy dissipators. Project involving design of multistory, multibay rigid-jointed plane frame. Prerequisite: consent of instructor.

CEE259 Structural Stability (3) S. Introduction to structural stability emphasizing behavior of simple structural components that illustrate various modes of instability: Euler columns, beam columns, 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.

CEE263 Advanced Biological Treatment Processes (3) W. Analysis of natural biological processes in the aquatic environment. Design of biological treatment processes with emphasis on suspended growth systems. Aerobic and anaerobic treatment systems, biodegradation of contaminants in the environment. Construction and use of computer models for process design and operation. Prerequisites: CEE161 and CEE162.

CEE265 Advanced Physical-Chemical Treatment Systems (3) S. Analysis of natural chemical processes in the aquatic environment. Modeling of physical-chemical treatment systems. Analysis of chemical processes which affect the fate of contaminants in the natural environment. Computer modeling of several systems included. Prerequisites: CEE161 and CEE162.

CEE266 Aqueous Geochemistry (3) S. 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: CEE262.

CEE267 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. Prerequisite: CEE263.

CEE269 Hazardous Waste Treatment and Disposal (3) S. Theory and design of hazardous waste treatment systems. Incineration and landfill approaches. Regulations governing waste disposal. Short- and long-term considerations in design. Extensive use of case studies. Prerequisite: consent of instructor.

CEE271 Flow in Unsaturated Porous Media (3) W. Fluid flow in the unsaturated zone (zone of aeration) of the subsurface. Soil-water physics, flow in regional groundwater systems, miscible displacement, mathematical modeling techniques. Prerequisite: CEE172 or consent of instructor.

CEE272 Stochastic Geohydrology (3) W. Uncertainty and spatial variability in groundwater systems. Probability concepts. Techniques for quantifying and reducing effects of uncertainty. Theory of stationary processes. Kriging as best linear unbiased estimator. Stochastic partial differential equations. Methods of parametric estimation. Resampling techniques. Prerequisite: CEE172 or consent of instructor. Formerly CEE276.

CEE274A Transport Phenomena in Saturated Porous Media (3) F. Solute and particle transport in saturated porous media. Development of macroscopic transport equations. Mathematics of diffusion. Effective macroscopic coefficients. Dissolution of nonaqueous phase liquids. Applied mathematical modeling techniques, including Laplace and Fourier transforms and particle tracking solutions. Prerequisite: CEE173, CEE283, or consent of instructor. Formerly CEE274.

CEE274B Transport Phenomena in Unsaturated Porous Media and Fractures (3) W. Advanced topics in contaminant transport in porous media. Development of macroscopic transport equations for saturated, partially saturated porous media and fractured formations. Colloid transport. Effects of formation heterogeneity on groundwater flow and transport. Applied mathematical modeling techniques, including self similar and small perturbation solutions. Prerequisites: CEE283 and consent of instructor.

CEE275 Topics in Coastal Engineering (3) S. Linear wave theory. Wave properties: particle kinematics, energy propagation, shoaling, refraction, reflection, diffraction, and breaking. Wave statistics and spectra. Selected topics from: design of coastal structures; harbor engineering; littoral transport and shoreline morphology; and hydrodynamics of estuaries. Prerequisites: CEE11, CEE171, or consent of instructor.

CEE276 Surface Water Hydrology (3) S. Analysis of elements in the hydrologic cycle including precipitation, infiltration, and runoff. Frequency analysis of hydrologic phenomena. Consideration of precipitation/runoff relationships. Units hydrograph theory. Hydrologic and hydraulic routing methods. Stochastic methods in hydrology. Prerequisite: consent of instructor. Formerly CEE272.

CEE277 Transport in Rivers and Estuaries (3) W. Advective, diffusive, and dispersive transport processes. Role of turbulence in transport, length scales associated with mixing. Consideration of point and non-point source pollutant transport in rivers and coastal inlets. Computational techniques for fate and transport predictions. Prerequisite: CEE278 or consent of instructor. Formerly CEE279.

CEE278 Flow in Rivers and Estuaries (3) F. Continuity, momentum, and energy principles applied to open channels. Flow control, Steady and unsteady flow. Flow resistance. Shallow-water wave theory. Flood waves in rivers and tidal oscillations in coastal wetlands. Computational techniques for flow modeling. Prerequisite: consent of instructor.

CEE279A Computations in Environmental Hydraulics (3) W. Numerical solution methods for flow and transport in rivers and estuaries. Stability, accuracy, and convergence properties of schemes. Finite-difference and finite-volume formulations. High-resolution and monotonicity preserving schemes for shallow-water flow and transport. Prerequisite: CEE278 or consent of instructor.

CEE279B Computations in Subsurface Hydrology (3) S. Numerical solution methods for subsurface flow and transport. Finite-difference and finite-element formulations are applied to mathematical models of fluid flow, mass transport, and energy transport in saturated and unsaturated porous media. Prerequisite: consent of instructor.

CEE280 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.

CEE281 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: CEE280, CEE283, or consent of instructor.

CEE282 Stochastic Modeling: Analysis and Simulation (3) S. An introduction to techniques for modeling dynamic, stochastic systems and to the mathematical, numerical, and simulation tools used to analyze them. Topics include the role of simulation modeling in the analysis of large-scale stochastic systems, queueing systems, and verification and validation procedures. Prerequisite: knowledge of probability or consent of instructor.

CEE283 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.

CEE284 Engineering Decision and Risk Analysis (3) F. Develops applications of statistical decision theory in engineering. Presents the fundamental tools used in engineering decision making and analysis of risk under conditions of uncertainty. All concepts are presented and illustrated thoroughly with engineering problems. Prerequisite: CEE105 or consent of instructor.

CEE285 Reliability of Engineering Systems I (3) W. Develops the basic concepts for the definition and assessment of safety and reliability of engineering systems. Includes probabilistic modeling of engineering problems, assessment of component reliability, systems reliability, and introduction to probability-based design. Prerequisite: CEE105 or consent of instructor.

CEE286 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: CEE285 or consent of instructor.

CEE287 Random Vibrations (3) W. 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.

CEE288 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: CEE287 or consent of instructor.

CEE295 Seminars in Engineering (1 to 12) F, W, S. Seminars scheduled each year by individual faculty in major field of interest. Prerequisite: consent of instructor. May be repeated for credit.

CEE296 Master of Science Thesis Research (4 to 12) F, W, S. Individual research or investigation conducted in preparation of the thesis required for the M.S. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

CEE297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S. Individual research or investigation conducted in preparation for the dissertation required for the Ph.D. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

CEE298 Special Topics in Civil Engineering (1 to 4) F, W, S. Presentation of advanced topics and special research areas in civil engineering. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

CEE299 Individual Research (1 to 12) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit.

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

305 Engineering Tower; (949) 824-4821
Nader Bagherzadeh, **Department Chair**

Faculty

Nicolaos G. Alexopoulos: High-frequency integrated circuit antennas, wireless communication, materials
Nader Bagherzadeh: Parallel processing, computer architecture, computer graphics, VLSI design
Neil J. Bershad *(Emeritus):* Communication and information theory, signal processing
Douglas M. Blough: Parallel processing, fault-tolerant computing
Lynn Choi: Microprocessor design, parallel architectures, optimizing and parallelizing compilers
Pai Chou: Hardware/software co-design, embedded systems, component-based design, specification methodology, interface synthesis, real-time systems
Rui J. P. de Figueiredo: Machine intelligence and neural and soft computing; signal and image processing; applied mathematics
Franco De Flaviis: microwave systems, wireless communications and electromagnetic circuit simulations
Hideya Gamo *(Emeritus):* Quantum electronics, electromagnetics
Michael M. Green: Analog IC design, circuit simulation, theory of nonlinear circuits
Glenn E. Healey: Machine vision, computer engineering, image processing, computer graphics, intelligent machines
Scott Jordan: Modeling and analysis of behavior, control, and pricing in computer/telecommunication networks
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, microwave devices and measurements, 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, e-commerce
Richard D. Nelson: Sensors, microelectronics, photonics, medical imaging
Douglas C. Schmidt: Adaptive real-time middleware, distributed object computing, design patterns, and high-performance network programming
Phillip C-Y. Sheu: Database systems, interactive multimedia systems
Roland Schinzinger *(Emeritus):* Electromagnetics, power systems, operations research
Jack Sklansky *(Emeritus):* Pattern recognition, machine vision, medical imaging, neural learning, computer engineering
Keyue M. Smedley: Power electronics
Allen R. Stubberud: Control systems, digital signal processing, estimation and optimization
Harry H. Tan: Communication and information theory, stochastic processes
Chen S. Tsai: Integrated and fiber optics, devices, and materials, acoustooptics, magnetooptics, acoustic microscopy
Wei Kang (Kevin) Tsai: Data communication networks, neural networks, parallel algorithms and architectures, CAD for VLSI systems engineering

Affiliated Faculty

Lubomir Bic: Parallel processing, dataflow systems, database machines
Nikil D. Dutt: VLSI design automation tools, design methodologies, design languages, high-level synthesis
Daniel D. Gajski: Parallel algorithms and architectures, design methodology, design science, CAD algorithms and tools, software/hardware co-design
Julius M. Gardin: Cardiology, echocardiography, image process and pattern recognition computer-aided diagnoses
Sabee Molloi: Physics of medical imaging
Orhan Nalcioglu: Nuclear magnetic resonance imaging and spectroscopy, digital radiography, computed tomography, medical imaging
Alexandru Nicolau: Architecture, parallel computation, programming languages and compilers
Issac Scherson: Parallel computing architectures, massively parallel systems, parallel algorithms, interconnection networks, performance evaluation
Tatsuya Suda: Computer networks, distributed systems, performance evaluation

Lecturers

Syed Ahmed: Electric power systems
Harut Barsamian: Computer systems, architectural technology
Robert C. Carden, IV: C/C++, real-time system program
Maqsood Chaudhry: Field theory, numerical analysis, analog circuits
Gerard Coutu: Adaptive pattern recognition and signal processing
Alirea Kavianpour: Multi-processor systems

Electrical and Computer Engineering is a broad field encompassing such diverse subject areas as computer systems, distributed computing, computer networks, control, electronics, photonics, digital systems, mixed-mode circuits (analog and digital), communications, signal processing, electromagnetics, and physics of semiconductor devices. Knowledge of the mathematical and natural sciences is applied to the theory, design, and implementation of devices and systems for the benefit of society. The Department offers two ABET-accredited undergraduate degrees: Electrical Engineering and Computer Engineering.

Some electrical engineers focus on the study 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 complex electronic systems such as automatic controls, telecommunications, wireless communications, and signal processing.

Computer engineers are trained in various fields of computer science and engineering. They engage in the design and analysis of digital computers and networks, including software and hardware. Computer design includes topics such as computer architecture, VLSI circuits, computer graphics, design automation, system software, data structures and algorithms, distributed computing, and computer networks. Computer Engineering courses include programming in high-level languages such as C++ and Java; use of

software packages for analysis and design; design of system software such as compilers, debuggers, and operating systems; and application of computers in solving engineering problems. Laboratories in both hardware and software experiences are integrated within the Computer Engineering curriculum.

The undergraduate curricula in Electrical Engineering and Computer Engineering provide a solid foundation for future career growth, enabling graduates' careers to grow technically, administratively, or both. Many electrical and computer engineers will begin work in a large organizational environment as members of an engineering team, obtaining career satisfaction from solving meaningful problems that contribute to the success of the organization's overall goal. As their careers mature, technical growth most naturally results from the acquisition of an advanced degree and further development of the basic thought processes instilled in the undergraduate years. Administrative growth can result from the development of management skills on the job and/or through advanced degree programs in management.

Graduates of Electrical and Computer Engineering will find a variety of career opportunities in areas including wireless communication, voice and video coding, biomedical electronics, circuit design, optical devices and communication, semiconductor devices and fabrication, power systems, computer hardware and software design, computer networks, design of computer-based control systems, application software, data storage and retrieval, computer graphics, pattern recognition, computer modeling, parallel computing, and operating systems.

Undergraduate Major in Computer Engineering

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 161.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of engineering physics (with laboratory), one course in computational methods (C, C++), and two additional approved courses for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact the Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE IN COMPUTER ENGINEERING

Credit for at least 190 units including:

University Requirements: See pages 54–59.

School Requirements: See pages 161–162.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B, 2D, 2J, 3D, and 6A (24 units).

Basic Science Courses: Chemistry 1A or Physics 51A, Physics 7A-B-D-E, 7LA-LB-LD, 52A-B (at least 27 units).

Basic Engineering Courses: ECE10, ECE20, ECE31, ECE31LB, ECE40, ECE70A, ECE70B, ECE70LB (27 units).

Computer Engineering Core Courses: Information and Computer Science (ICS) 23, ICS161; Engineering ECE113A, ECE113LA, ECE113B, ECE113LB, ECE120A, ECE120B, ECE132, ECE132L, ECE142, ECE145, ECE151, ECE180 or Mathematics 114A, and ECE186 (52 units).

Technical Electives: 15 units; at least three courses should be selected from the following list: ECE104, ECE137, ECE143, ECE146, ECE161, and Information and Computer Science 142. Others may be chosen from the following list: ECE113D, ECE128, ECE135A, ECE135B, ECE136, ECE199 or ECEH199 (up to 3 units). All technical electives must be approved by the faculty advisor.

No more than 6 units of ECE199 OR ECEH199 can be applied to the major in Computer Engineering.

PLANNING A PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Computer Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their advisor. Computer Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisor.

Sample Program of Study — Computer Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Physics 7A, 7LA	Physics 7B, 7LB,	Physics 7D, 7LD
ECE10	Chemistry 1A, 1LA	ECE20
Breadth	Breadth or ECE10	Breadth
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 6A
Physics 7E, 52A	Physics 52B	ECE40
ECE31	ECE70A	ECE70B, 70LB
	ECE31LB	Breadth
Junior		
ECE113A, 113LA	ECE113B, 113LB	ECE120B
ECE180 or Math. 114A	ECE120A	ECE132L
ICS 23	ECE132	ICS161
Breadth	Breadth	Breadth
Senior		
ECE142	ECE145	ECE186
ECE151	Technical Elective	Technical Elective
Breadth	Breadth	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.

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, electronics, electronic system design, signal processing, control systems, electromagnetics, and computer engineering. They learn to design circuits and systems to meet specific needs and to use modern computers in problem analysis and solution.

Electrical Engineering majors have the opportunity to select a specialization in Electro-optics and Solid-State Devices; 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 161.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of engineering physics (with laboratory), one course in computational methods (C, C++), and two additional approved courses for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact the Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING

Credit for at least 191 units including:

University Requirements: See pages 54–59.

School Requirements: See pages 161–162.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E (24 units).

Basic Science Courses: Chemistry 1A and 1LA, Physics 7A-B-D-E, 7LA-LB-LD, 51A-B, 52A-B-C (at least 38 units).

Basic Engineering Courses: Engineering E80 or E54, ECE10, ECE31, ECE31LA, ECE70A, ECE70B, and ECE70LB (22 units).

Electrical Engineering Core Courses: Engineering ECE113A, ECE113LA, ECE113B, ECE113LB, ECE113C, ECE113LC, ECE113D, or ECE151, ECE120A, ECE120B, ECE140A, ECE140LA, 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 ECE113D (if not used to satisfy major requirements), ECE114A, ECE114B, ECE176, ECE176L, ECE177, ECE177L, ECE178, ECE198 (Special Topics in Electro-optics or Solid State Materials/Devices), ECE199 or ECEH199 (up to 3 units).

Specialization in Power Systems: 12 units selected from Engineering ECE140B, ECE160, ECE160L, ECE163, ECE163L, ECE199 or ECEH199 (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 or ECEH199 (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 Student Affairs Office can provide necessary guidance for satisfying the design requirements.

No more than 6 units of ECE199 or ECEH199 can be applied to the major in Electrical Engineering.

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 Student Affairs Office and with their faculty advisors at least once a year.

Sample Program of Study — Electrical Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
ECE10	Chemistry 1A, 1LA	Breadth
Breadth	Breadth or ECE10	Breadth
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Physics 7E, 52A	Physics 51A, 52B	Physics 51B, 52C
ECE31, 31LA	ECE70A	ECE70B, 70LB
Junior		
ECE113A, 113LA	ECE113B, 113LB	ECE113C, 113LC
ECE170	ECE120A	ECE120B
ECE180 or Mathematics 114A	E54 or E80	ECE186
Breadth	Breadth	Breadth
Senior		
ECE113D	Technical Elective	Technical Elective
ECE140A, 140LA	Technical Elective	Technical Elective
Technical Elective	Breadth	Breadth
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 a concentration in Computer Networks and Distributed Computing, Computer Systems and Software, or Electrical Engineering. The Computer Networks and Distributed Computing concentration covers design and evaluation of computer networks and distributed computer systems, and their integration into a comprehensive computing system. The Computer Systems and Software concentration covers all aspects of computer systems design, from digital VLSI to system software. 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

Two plans are offered 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 first enrollment.

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; and approval of the thesis by a thesis committee. Required undergraduate core 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 concentration on a specific research 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 Networks and Distributed Computing, Computer Systems and Software, 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. Undergraduate core courses or equivalent 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 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. 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. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies. Part-time study toward the Ph.D. degree is not permitted. 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 and a breadth examination both administered near the end of the first year of doctoral study by faculty in the student's area of specialization (for details see listing under the three concentrations below).

COMPUTER NETWORKS AND DISTRIBUTED COMPUTING CONCENTRATION

The concentration in Computer Networks and Distributed Computing is concerned with the design and evaluation of computer networks and distributed computer systems, and their integration into a comprehensive computing system. Both hardware and software aspects of these systems are covered. Specific topics include computer communication protocols; performance modeling and analysis of computer networks; computer network hardware; reliability, security, and fault tolerance in computer networks and distribution computer systems; distributed operating systems; distributed software architectures, distributed data bases, network-based parallel computing, and programming languages for parallel/distributed processing. Related topics are addressed within the Computer Systems and Networks concentration in the Department of Information and Computer Science (ICS).

Master of Science Degree

Plan I: Thesis Option

A total of 36 units are required for the degree. Four core courses must be completed with a grade of B (3.0) or better; a minimum of three additional core or concentration courses must also be completed. The required concentration and core courses will be selected from the list of relevant courses corresponding to the Computer Networks and Distributed Computing concentration. No more than 12 units of ECE296 (M.S. Thesis Research) may be counted toward the degree.

Plan II: Comprehensive Examination Option

The comprehensive examination option requires the completion of 36 units. A minimum of seven Computer Networks and Distributed Computing concentration courses are required. Four of these courses must be the core courses; the other three may be chosen from the core or concentration courses. The remainder of the 36 units must be selected from the list of relevant courses corresponding to the Computer Networks and Distributed Computing concentration.

Doctor of Philosophy Degree

The Ph.D. preliminary examination consists of breadth and depth components in the form of taking courses, written examination and oral examination, including a GRE subject test in Computer Science or Mathematics. A student must pass the Ph.D. preliminary examination within one academic year from first enrollment. A public Ph.D. dissertation defense must be given.

Computer Networks and Distributed Computing Courses

Core courses: ECE231, ECE233, ECE235, ECE252.
Concentration courses: ECE229A, ECE229B, ECE255, ECE281B.
Other related courses: ECE253, ECE254, ECE257, ECE281A, ICS 244, ICS 248.

COMPUTER SYSTEMS AND SOFTWARE CONCENTRATION

The Computer Systems and Software Concentration is concerned with the set of engineering principles which are used for design and construction of information-processing systems and software. The engineering design procedures are based on both the computational principles and theories discovered in the field of computer science and new highly integrated component devices made by electrical engineers. The main research activities of the faculty of this concentration are in the areas of fault-tolerant computing, parallel and distributed computer systems, ultra-reliable real-time computer systems, VLSI architectures, computer design automation, numerical processing, and intelligent management.

In addition to the general department requirements, the following requirements must be met.

Master of Science Degree

Plan I: Thesis Option

A total of 36 units are required for the degree. Four core courses must be completed with a grade of B (3.0) or better; a minimum of three additional core or concentration courses must also be completed. The required concentration and core courses will be selected from the list of courses corresponding to the Computer Systems and Software concentration. (With approval of the student's thesis advisor and the Department's graduate advisor, two of the three additional non-core concentration courses may be non-research, non-seminar, graduate-level courses offered outside of the Computer Systems and Software concentration. Any substitution courses chosen 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 in addition to the required 36 units.

Plan II: Comprehensive Examination Option

The comprehensive examination option requires the completion of 36 units. A minimum of seven Computer Systems and Software courses are required. Four of these must be core courses completed with a grade of B (3.0) or better; the remaining three must be selected from the list of core and concentration courses corresponding to the Computer Systems and Software concentration.

Doctor of Philosophy Degree

The Ph.D. preliminary examination consists of breadth and depth components in the form of taking courses, written examination and oral examination, including a GRE subject test in Computer Science or Mathematics. A student must pass the Ph.D. preliminary examination within one academic year. A public Ph.D. dissertation defense must be given.

Computer Systems and Software Courses

Core courses: ECE231, ECE233, ECE235, ECE251, and ECE252.
Concentration courses: ECE207, 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). The required concentration and core courses will be selected from the list of relevant courses corresponding to the Electrical Engineering concentration.

Plan II: Comprehensive Examination Option

A minimum of nine Electrical Engineering core or concentration courses of which four are core courses must be completed. The required concentration and core courses will be selected from the list of relevant courses corresponding to the Electrical Engineering concentration.

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.

Electrical Engineering Courses

Core courses: ECE233, ECE235, ECE240A, ECE275A, ECE279A, and ECE287A.
Concentration courses: ECE206, ECE207, ECE210A-B, ECE212, ECE217A-B, ECE227A-B, ECE228A-B, ECE229A-B, ECE230A, ECE234A-B, ECE240-B-C, ECE242, ECE251, ECE260, ECE275B-C, ECE279B, ECE281A, and ECE281B.

Courses in Electrical and Computer Engineering

LOWER-DIVISION

NOTE: The undergraduate courses listed below are open only to students in the Henry Samueli School of Engineering. All other majors must petition for permission to enroll.

ECE10 Computational Methods in Electrical and Computer Engineering (4) F, W, Summer. An introduction to computers and structured programming. Binary Data Representation. Hands-on experience with a high-level structured programming language. Introduction to algorithm efficiency. Applications of structured programming in solving engineering problems. or Prerequisite or corequisite: Mathematics 2A. Only one course from Engineering ECE10, CEE10, E10, and MAE10 may be taken for credit. Formerly ECE11. (Design units: 0)

ECE20 System Programming I (4) S, Summer. Advanced programming concepts for system software including data types, pointers, recursion and modules. The UNIX programming environment and software development tools. Prerequisite: ECE10, CEE10, or MAE10. (Design units: 1)

ECE31 Introduction to Digital Systems (4) F, Summer. Digital representation of information. Specifications of combinational and sequential systems. Analysis and design of networks of gates and flip flops. Standard modules and their use. Introduction to algorithmic systems: datapath and control. Prerequisite: ECE10, CEE10, or MAE10. (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, Summer. 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, Summer. Modeling and analysis of electrical networks. Basic network theorems. Sinusoidal steady state and transient analysis of RLC networks and the impedance concept. Corequisite: Mathematics 2J or 3D. Prerequisites: Physics 7D; Engineering ECE10, CEE10, or MAE10. (Design units: 1)

ECE70B Network Analysis II (4) S, Summer. Laplace transforms, complex frequency, and the s-plane. Network functions and frequency response, including resonance. Bode plots. Two-port network characterization. Corequisite: ECE70LB. Prerequisites: ECE10, CEE10, or MAE10; ECE70A. (Design units: 1)

ECE70LB Networks Analysis II Laboratory (1) S. Laboratory to accompany ECE70B. Corequisite: ECE70B. Prerequisites: ECE10, CEE10, or MAE10; ECE70A. (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 2J or 3D. Prerequisites: Physics 7B; Engineering E10, ECE10, CEE10, or MAE10. Open only to Engineering, Civil Engineering, and Mechanical or Aerospace Engineering majors. (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 2J or 3D. (Design units: 2)

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: ECE113C, ECE113LC; ECE120B. (Design units: 4)

ECE113A Electronics I (4) F. The properties of semiconductors, electronic conduction in solids, the physics and operation principles of semiconductor devices such as diodes and transistors, transistor equivalent circuits, and transistor amplifiers. Corequisite: ECE113LA. Prerequisites: Physics 7E, ECE70A, ECE70B. (Design units: 1)

ECE113LA Electronics I Laboratory (1) F. Laboratory accompanying Engineering ECE113A to perform experiments on semiconductor material properties, semiconductor device physics and operation principles, and transistor amplifiers to improve experimental skills and to enhance the understanding of lecture materials. Corequisite: ECE113A. Prerequisites: Physics 7E, ECE70A, ECE70B. (Design units: 1)

ECE113B Electronics II (4) W. Design and analysis of single-stage amplifiers, biasing circuits, inverters, logic gates, and memory elements based on CMOS and bipolar transistors. Corequisite: ECE113LB. Prerequisites: ECE70B, ECE113A, ECE113LA. (Design units: 2)

ECE113LB Electronics II Laboratory (1) W. Laboratory accompanying Engineering ECE 113B. Corequisites: ECE113B. Prerequisites: ECE113A, ECE113LA. (Design units: 1)

ECE113C Electronics III (4) S. Principles of operation, design, and utilization of integrated circuit modules, including operational amplifiers and logic circuits. Corequisites: ECE113LC. Prerequisites: ECE113B, ECE113LB. (Design units: 2)

ECE113LC Electronics III Laboratory (1) S. Laboratory accompanying Engineering ECE 113C to provide hands-on training in design of digital/analog circuits/subsystems. Corequisites: ECE113C. Prerequisites: ECE113B, ECE113LB. (Design units: 1)

ECE113D Integrated Electronic Circuit Design (4) F. An overview of the design and fabrication of modern analog and digital integrated circuits. Topics include: fabrication materials and processes; transistor-level design simulation, layout and extraction of analog and digital circuits; automated design tools. Prerequisites: ECE113C and ECE113LC. Formerly ECE115A. (Design units: 3)

ECE113E Analog and Communications IC Design (4) W. Advanced topics in design of analog and communications integrated circuits. Topics include: A/D and D/A converters; tunable continuous-time filters; design of RF low-noise amplifiers, mixers, and IF filters; phase-locked loops; automatic gain control circuits. Prerequisite: ECE113D. (Design units: 3)

ECE114A Field-Effect Semiconductor Devices (4) F. Semiconductor theory, metal-semiconductor contracts and diodes, metal-oxide-semiconductor (MOS) structures; MOS field-effect transistors, junction field-effect transistors, device modeling and fabrication technologies. Prerequisites: Mathematics 2D; Mathematics 3D or consent of instructor. (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. Prerequisites: ECE113, ECE113LA. (Design units: 2)

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: ECE113A, 113LA. (Design units: 2)

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: ECE113A, 113LA. (Design units: 2)

ECE119 Microelectromechanical Systems (MEMS) (4) W. Small-scale machines, small-scale phenomena, MEMS fabrication, MEMS CAD tools, MEMS devices and packaging, MEMS testing. Prerequisite: Physics 51A or consent of instructor.

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/out devices and interfaces. Microprogramming and microprocessors. Prerequisite: 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)

ECE134 Antenna Design for Wireless Communication Links (4) S. Analysis and synthesis of antennas and antenna arrays. Adaptive arrays and digital beam forming for advanced wireless links. Friis transmission formula. Wireless communication equations for cell-site and mobile antennas, interference, slow and fast fading in mobile communication. Prerequisite: ECE170 or consent of instructor. (Design units: 0)

ECE135A Digital Signal Processing (3) F. Nature of sampled data, sampling theorem, difference equations, data holds, z-transform, w-transform, digital filters, Butterworth and Chebychev filters, quantization effects. 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. Prerequisite: 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: ECE10, CEE10, or MAE10; ECE113B, ECE113LB, 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) F. Multiprogramming, interrupt, processes, kernel, parallelism, critical sections, deadlocks, communication, multiprocessing, multilevel memory management, binding, name management, file systems, protection, resource allocation, scheduling. Experience with concurrent programming, synchronization mechanisms, interprocess communication. Prerequisite: ECE132; Information and Computer Science 23. ECE142 and Information and Computer Science 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: ECE132L. (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)

ECE146 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: Information and Computer Science 23. Same as Information and Computer Science 184. (Design units: 1)

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. Prerequisites: ECE70B, ECE113B, ECE113LB. (Design units: 2)

ECE160L Energy Conversion Laboratory (1) W. Laboratory exercises supplementing the content of ECE160. Corequisite or prerequisite: ECE160. (Design units: 0)

ECE161 Introduction to Computer Networks (4) S. 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. Prerequisites: ECE132 and 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. Prerequisites: ECE70B, ECE113B, ECE113LB. (Design units: 1)

ECE163L Electric Power Systems Laboratory (1) F. Experiments and field trips relevant to studies in power systems. Corequisite: 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: ECE113C, ECE113LC. (Design units: 1)

ECE170 Engineering Electromagnetics (4) F. Electromagnetic fields and solutions of problems in engineering applications; electrostatics, magnetostatics, steady D.C. current, Maxwell's equations and plane wave propagation, reflection, and transmission. Corequisite or prerequisite: Mathematics 2D and 3D. Prerequisite: Physics 7E. (Design units: 0)

ECE172 Monolithic Microwave Integrated Circuit (MMIC) Analysis and Design (4) W. Design of filters, hybrids, amplifiers, and oscillators, including low-noise amplifiers (LNA), power amplifiers, Ultra-wideband amplifiers (distributed amplifiers). The final goal is to give the capability to design wireless system on a single chip. Prerequisite: ECE170 or consent of instructor. (Design units: 0)

ECE175A, B Photomedicine I, II (4, 4) F, W. Lecture, three hours; discussion, one hour. Studies the use of optical and engineering-based systems (laser-based) for diagnosis, treating diseases, manipulating cells and cell function. Physical, optical, and electro-optical principles are explored regarding molecular, cellular, organ, and organism applications. Same as Biological Sciences 130A, B.

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_2 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. Photodiodes and optical detection, photometry and radiometry, geometric optics, lens theory, imaging system, EM wave propagation, optical waveguides and fibers, heterojunction structures, laser theory, semiconductor lasers, and optical transmission system. Prerequisite: consent of instructor. (Design units: 1)

ECE180 Electrical Engineering Analysis (3) F. Functions of complex numbers and their application to electrical engineering problems. Applications to lumped and continuous parameter engineering systems. Prerequisites: Mathematics 2J or 3D; Engineering ECE70B. ECE180 and Mathematics 114A may not both 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. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. (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. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor; open only to Campuswide Honors students. May be taken for credit four times.

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 Advanced Analog Integrated Circuit Design I (3) F. Basic transistor configurations; differential pairs; active load/current sources; supply/temperature-independent biasing; op-amp gain and output stages; amplifier frequency response and stability compensation; nonidealities in op-amps; noise and dynamic range in analog circuits. Prerequisites: ECE113B, 113LB; ECE113C, 113LC; or equivalent.

ECE210B Advanced Analog Integrated Circuit Design II (3) W. Advanced transistor modeling issues; discrete-time and continuous-time analog IC filters; phase-locked loops; design of ICs operating at radio frequencies; low-voltage/low-power design techniques; A/D and D/A converters; AGC circuits. Prerequisite: ECE210A or consent of instructor.

ECE212 Topics in Electronic System Design (3). New research results in electronic system design. Prerequisite: consent of instructor. May be repeated for credit.

ECE216 Solid-State Electronics (3) F. Covers the fundamentals of solid-state electronics which govern the operating principles of semiconductor devices. Specific topics include crystal structure, energy band, carrier transport, carrier generation and recombination, optical properties, heterostructure, quantum confinement effect, and nanostructures. Prerequisites: ECE113A, ECE170; or consent of instructor. *Offered alternate years.*

ECE217A Advanced Semiconductor Devices I (3) W. Advanced complementary metal-oxide-semiconductor field-effect transistors (CMOSFET), device scaling, device modeling and fabrication, equivalent circuits, and their applications for digital, analog, RF. Prerequisite: ECE114A.

ECE217B Advanced Semiconductor Devices II (3) S. Metal-semiconductor field-effect transistors (MESFET), heterojunction bipolar transistors (HBT), microwave semiconductor devices, equivalent circuits, device modeling and fabrication, microwave amplifiers, transmitters, and receivers. Prerequisite: ECE114A.

ECE219 Biomedical Microdevices (MEMOS) (3) S. Construction, lithographic patterning and etching, sealing and connecting, molding, and testing of microdevices. Prerequisite: ECE119 or consent of instructor.

ECE227A-B Detection, Estimation, and Demodulation Theory (3-3). 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. *ECE227A offered alternate years beginning winter 1999; ECE227B offered alternate years beginning winter 2000.*

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 Computer Communication Networks (3) F. Introduction to computer communication networks. Fundamental concepts of data communications, layered network architecture and network protocols. Integrated service networks and quality of service. The Internet Protocol and the Asynchronous Transfer Mode. Fundamental concepts of wireless networks and network security.

ECE229B Performance Analysis of Computer Communication Networks (3) W. Introduction to performance analysis of computer communication networks. Error correction codes and data link layer protocols. Queuing models for communication networks. Multi-access communication. Flow and congestion controls. Routing and admission control. Mathematical modeling and optimization of network performance and design. 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.

ECE231 Advanced System Software (3) W. 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: ECE132 and ECE142 or consent of intructor. May be taken for credit twice.

ECE233 Computer Architecture (3) F. 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 ECE234A.

ECE235 Design and Analysis of Algorithms (3) F. 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.

ECE237A-B Fundamentals of Biomedical Imaging Systems (4-4) F, W. Lecture, three hours. Physical principles and methods of biomedical imaging systems. Linear systems, random processes, projection imaging, computed tomography, x-rays, nuclear medicine, ultrasound, optical imaging, NMR, EEG, MEG imaging and impedance tomography. Same as Physics 233A-B and Radiological Sciences 201A-B.

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.

ECE249 Micro Sensors and Actuators (4) S. Introduction to the technology of Micro-Electro-Mechanical Systems (MEMS). Fundamental principles and applications of important microsensors, actuation principles on micro-scale. Introduction to the elements of signal processing; processing of materials for micro sensor/actuator fabrication; smart sensors and microsensor/microactuator array devices. Same as MAE249.

ECE251 VLSI System Design (3) S. 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. Prerequisite: ECE132.

ECE252 Distributed Computer Systems (3) S. Design and analysis techniques for decentralized computer architectures, communication protocols, and hardware-software interface. Performance and reliability considerations. Design tools. Prerequisites: 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.

ECE255 Distributed Software Architecture and Design (3). Practical issues for reducing the software complexity, lowering cost, and designing and implementing distributed software applications. Topics include the distributed object model distributed environment, platform-independent software agents and components, the middleware architecture for distributed real-time and secure services. Prerequisite: ECE231.

ECE257 Advanced Database Systems (3). Advanced data models, distributed database management systems, parallel databases, multimedia and visual databases, Web database management, advanced database applications. Prerequisite: ECE 146 or Information and Computer Science 184.

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.

ECE259 Microarchitecture and Compilation Techniques for Parallel Processing (3) S. New advances in microarchitecture and compilation techniques for microprocessors. Static and dynamic instruction-level parallelism (ILP) techniques. Superscalar processors, VLIW processors, multithreaded processors. Code analysis, scheduling, and optimization. Interaction of compiler and architecture. Prerequisites: ECE142 and ECE233.

ECE260 Design and Control of Electromechanical Energy Converters (3). Advanced topics in the generalized theory of electrical machines. Design criteria and methodology, including analytical and numerical field analysis. Electronic control of generators and motors. With laboratory where appropriate. Prerequisite: ECE160 or consent of instructor. May be repeated for credit with consent of instructor.

ECE266A Advanced Power Electronics (3). New developments in power electronics: switching converter topologies, control, magnetics, and applications. Prerequisite: ECE113B, 113LB; ECE140B; ECE166; 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.

ECE275C Integrated and Fiber Optics (3) S. Optical waveguides; passive and active guided-wave devices; integrated optics modules/circuits and applications; optic fibers; fiber optic devices; fiber optic communications systems; fiber optic sensors. Prerequisites: ECE275A and ECE275B.

ECE278 Lasers and Photonics (3) W. Covers the fundamentals of lasers and applications, including Gaussian beam propagation, interaction of optical radiation with matters, and concepts of optical gain and feedback. Applications are drawn from diverse fields of optical communication, signal processing, and material diagnosis. Prerequisite: undergraduate course work in electromagnetic theory and atomic physics.

ECE279A Advanced Engineering Electromagnetics I (3) W. Stationary electromagnetic fields, Maxwell's equations, circuits and transmission lines, plane waves, guided waves, and radiation. Prerequisite: ECE170 or equivalent.

ECE279B Advanced Engineering Electromagnetics II (3) S. Two- and three-dimensional boundary value problems, dielectric waveguides and other special waveguides, microwave networks and antenna arrays, electromagnetic properties of materials, and electromagnetic optics. Prerequisite: ECE279A or equivalent.

ECE281A Linear Optimization Methods (3) F. Formulation, solution, and analysis of linear programming and linear network flow problems. Simplex methods, dual ascent methods, interior point algorithms and auction algorithms. Duality theory and sensitivity analysis. Shortest path, max-flow, assignment, and minimum cost flow problems. Prerequisite: Mathematics 2J or consent of instructor.

ECE281B Nonlinear Optimization Methods (3) F. Formulation, solution, and analysis of nonlinear programming problems. Unconstrained optimization, optimization over a convex set, Lagrange multiplier theory, Lagrange multiplier algorithms, duality theory, convex programming, dual methods, and multi-objective optimization theory. Emphasizes mathematical analysis. Prerequisite: Mathematics 2J or consent of instructor.

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; (949) 824-8451
Said E. Elghobashi, **Department Chair**

Faculty

James E. Bobrow: Nonlinear control systems, optimization methods, robotics
Haris J. Catrakis: Turbulence and mixing at high Reynolds numbers, flow control for aerospace and marine vehicles
Donald Dabdub: 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
Joyce H. Keyak: Orthopaedic surgery
John C. LaRue: Fluid mechanics, heat transfer, turbulence, instrumentation
Enrique J. Lavernia: Solidification processing of metals, powder metallurgy, intermetallics
Robert H. Liebeck: Advanced aircraft design
Feng Liu: Computational fluid dynamics, aeroelasticity, turbomachines, propulsion
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 and computational methods

David J. Reinkensmeyer: Robotics, mechatronics, biomedical engineering, rehabilitation, biomechanics, neural control of movement
G. Scott Samuelsen: Energy, propulsion, combustion and environmental conflict; turbulent transport in complex flows, spray physics, NOx and soot formation, laser diagnostics and experimental methods; application of engineering science to practical propulsion and stationary systems; environmental ethics
William E. Schmitendorf: Control theory and applications
Andrei M. Shkel: Design and advanced control of micro-electro-mechanical systems (MEMS)
Athanasios Sideris: Control systems, neural networks
William A. Sirignano: Combustion theory and computational methods, multiphase 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
Edriss Titi: Partial differential equations, nonlinear analysis
Frederic Yui-Ming Wan: Applied mathematics

Lecturers

Erik A. Aagard: Computer-aided design, computer-aided manufacturing
Maqsood A. Chaudhry: Computational methods
David J. Dimas: Finite element analysis and structural dynamics
Eugene Evancoe: Design and analysis of signal conditioning and data acquisition circuits
Gerald Janicki: Aircraft design
Glen J. Kissel: Applied mechanics
Bryan J. Martin: Control systems
Eric L. Petersen: Thermo/fluid systems
Scott R. Ploen: Control systems
Roger D. Schaufele: Aircraft design

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 161.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of engineering physics (with laboratory), one course in general chemistry, and two additional approved courses for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact the Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN AEROSPACE ENGINEERING

Credit for at least 193 units including:

University Requirements: See pages 54–59.

School Requirements: See pages 161–162.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E (24 units).

Basic Science Courses: Chemistry 1A-B and 1LA-LB, Physics 7A-B-D-E and 7LA-LB-LD, 52A (32 units).

Basic Engineering Courses: Engineering MAE10, E54, ECE72, MAE30, MAE80, and MAE91 (23 units).

Aerospace Engineering Core Courses: Engineering MAE106, MAE108, MAE112, MAE120, MAE130A, MAE130B, MAE135, MAE136, MAE140, MAE146, MAE150, MAE157, MAE158, MAE159, MAE170, and MAE175 (64 units).

Technical Electives: 4 units; students may select, with the approval of their faculty advisor, a technical elective incorporating at least 1 design unit.

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.

At most an aggregate total of 4 units of 199 or H199 courses may be used to satisfy degree requirements.

PROGRAM OF STUDY

Sample Program of Study — Aerospace Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
MAE10	Chemistry 1A, 1LA	Chemistry 1B, 1LB
Breadth	Breadth	
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Physics 7E, 52A	MAE80	MAE91
MAE30	E54	Breadth
	ECE70A/ECE72	Breadth
Junior		
MAE130A	MAE106	MAE120
MAE140	MAE130B	MAE146
Breadth	MAE150	MAE157
Breadth	Breadth	MAE170
Senior		
MAE108	MAE112	MAE159
MAE135	MAE158	MAE175
MAE136	Technical Elective	Breadth
Breadth	Breadth	Breadth

The sample program of study chart shown is typical for the major in Aerospace Engineering. This program is based upon a set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Aerospace Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisor.

Undergraduate Major in Mechanical Engineering

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 understanding.

ADMISSIONS

High School Students: See page 161.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of engineering physics (with laboratory), one course in general chemistry, and two additional approved courses for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact the Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN MECHANICAL ENGINEERING

Credit for at least 196 units including:

University Requirements: See pages 54–59.

School Requirements: See pages 161–162.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E (24 units).

Basic Science Courses: Chemistry 1A-B and 1LA-LB, Physics 7A-B-D-E, 7LA-LB-LD, 52A (32 units).

Basic Engineering Courses: Engineering MAE10, E54, ECE72, MAE30, MAE52, MAE80, and MAE91 (27 units).

Mechanical Engineering Core Courses: Engineering MAE106, MAE107, MAE115, MAE120, MAE130A, MAE130B, MAE140, MAE145, MAE147, MAE150, MAE151, MAE170, and MAE189A-B-C (51 units).

Restricted Technical Electives: Engineering MAE108 or MAE180 (4 units).

Technical Electives: 12 units; students may select, with the approval of their faculty advisor, an area of specialization and complete the associated requirements, as shown below.

Specialization in Aerospace Engineering: Completion of a Senior Design Project in this area and three courses selected from Engineering MAE108, MAE112, MAE135, MAE136, MAE158, MAE159, and MAE175.

Specialization in Combustion/Propulsion: Completion of a Senior Design Project in this area and three courses selected from Engineering MAE110, MAE112, MAE135, MAE164, MAE180, and MAE185.

Specialization in Environmental Engineering: Completion of a Senior Design Project in this area and two courses selected from Engineering MAE110, MAE162, or MAE164, and one course selected from CEE173, ChE160, or Earth System Science 201A.

Specialization in Heat Transfer/Fluid Mechanics: Completion of a Senior Design Project in this area and the following three courses: Engineering MAE135, MAE180, and MAE185.

Specialization in Materials Science and Engineering: Completion of a Senior Design Project in this area and three courses selected from Engineering ChE60, MSE153, MSE155A, MAE155B, MAE156, and MAE199 (3 or 4 units).

Specialization in Mechanical Systems: Completion of a Senior Design Project in this area and three courses selected from Engineering MAE171, MAE172, MAE180, and MAE185.

In addition, students must aggregate a minimum of 26.5 design units, at least 3 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 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.

At most an aggregate total of 4 units of 199 or H199 courses may be used to satisfy degree requirements.

PROGRAM OF STUDY

The sample program of study chart shown is typical for the accredited major in Mechanical Engineering. Students should keep in mind that this program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Mechanical Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisors.

Sample Program of Study — Mechanical Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
MAE10	Chemistry 1A, 1LA	Chemistry 1B, 1LB
Breadth	Breadth	
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Physics 7E, 52A	MAE80	MAE52
MAE30	E54	MAE91
Breadth	ECE70A/ECE72	Breadth
Junior		
MAE115	MAE106	MAE120
MAE130A	MAE130B	MAE170
MAE140	MAE150	MAE145
MAE147	Breadth	Breadth
Senior		
MAE189A	MAE189B	MAE189C
MAE151	Technical Elective	MAE107
MAE108 or MAE180	Breadth	Technical Elective
Technical Elective	Breadth	Breadth
Breadth		Breadth

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 and nonlinear control, structural control, micro-electro-mechanical systems (MEMS), computer-aided design, and robotics—including mechanical design, biorobotics, motion optimization, 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 MAE200–289, and 16 units from unrestricted courses of which not more than eight units are in MAE296 and not more than five units are in other courses numbered MAE291–299. 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 MAE200–289. 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 Mechanical and Aerospace Engineering

LOWER-DIVISION

NOTE: The undergraduate courses listed below are open only to students in the Henry Samueli School of Engineering. All other majors must petition for permission to enroll.

MAE10 Introduction to Engineering Computations (4) F. Introduction to the solution of engineering problems through the use of the computer. Elementary programming in FORTRAN and Matlab is taught. No previous knowledge of computer programming is assumed. Prerequisite or corequisite: Mathematics 2A. Only one course from Engineering MAE10, CEE10, E10, and ECE10 may be taken for credit. (Design units: 1)

MAE30 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 7A. MAE30 and CEE30 may not both be taken for credit. (Design units: 0)

MAE52 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)

MAE57 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)

MAE80 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: MAE30 or CEE30. Only one course from MAE80, CEE80, E80 may be taken for credit. (Design units: 0.5)

MAE91 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 7B, Mathematics 2D. Engineering MAE91 and Engineering ChE60 may not both be taken for credit. (Design units: 0.5)

MAE99T 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

MAE106 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: MAE140 or MAE147; ECE72. (Design units: 2)

MAE107 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: MAE120. Prerequisites: MAE91, MAE130B. (Design units: 1)

MAE108 Aerospace Laboratory (4) F. Analytical and experimental investigation in aerodynamics, fluid dynamics, and heat transfer. Emphasis on study of flow over objects and lift and drag on airfoils. Introduction to basic diagnostic techniques. Report writing is emphasized and a design project is required. Prerequisite: MAE130B. (Design units: 2)

MAE110 Combustion 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: MAE115. (Design units: 2)

MAE112 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: MAE91, MAE135. (Design units: 1)

MAE115 Applied Engineering Thermodynamics (4) F. Application of thermodynamic principles to compressible and incompressible processes representative of practical engineering problems—power cycles, refrigeration cycles, multicomponent mixtures, air conditioning systems, combustion and compressible flow. Design of a thermodynamic process. Prerequisite: MAE91. (Design units: 1)

MAE120 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: MAE91, MAE130B. (Design units: 0)

MAE130A Introduction to Fluid Mechanics (4) F. Fundamental concepts; fluid statics; fluid dynamics; Bernoulli's equation; control-volume analysis; basic flow equations of conservation of mass, momentum, and energy; differential analysis; potential flow; viscous incompressible flow. Prerequisites: Physics 7A; Mathematics 2E or equivalent; Engineering MAE80. MAE130A and CEE170 may not both be taken for credit. (Design units: 0)

MAE130B Introduction to Viscous and Compressible Flows (4) W. Introduction to the analysis of viscous flows including fully developed laminar and turbulent flow in a pipe, viscous flow over immersed bodies, evaluation of boundary layer characteristics, lift and drag, compressible flow in a duct and normal shock waves. Prerequisites: MAE91, MAE130A. (Design units: 1)

MAE135 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: MAE91, MAE130A, MAE130B. (Design units: 1)

MAE136 Aerodynamics (4) F. Analysis of flow over aircraft wings and airfoils, prediction of lift, moment, and drag. Topics: fluid dynamics equations; flow similitude; viscous effects; vorticity, circulation, Kelvins's theorem, potential flow; superposition principle, Kutta-Joukowski theorem; thin airfoil theory; finite wing theory; compressibility. Prerequisites: MAE130A, MAE130B. (Design units: 1)

MAE140 Introduction to Engineering Analysis II (4) F. Analytical methods in engineering. Variable coefficient linear ordinary differential equations. Eigenfunction expansions. Complex variables, contour integrations, inverse Laplace transform. Linear partial differential equations. Introduction to Fourier transforms. Prerequisite: Mathematics 2E or equivalent. (Design units: 0)

MAE145 Theory of Machines and Mechanisms (4) S. Presents the basic mathematical theory of machines. Focuses on the principles of CAM design, gearing and gear train analysis, and the kinematic and dynamic analysis of linkages, together with an introduction to robotics. Prerequisites: Engineering MAE80; Mathematics 2J. (Design units: 2)

MAE146 Astronautics (4) S. Motion in gravitational force fields, orbit transfers, rocketry, interplanetary trajectories, attitude dynamics and stabilization, navigation, reentry, the space environment. Prerequisite: MAE80. (Design units: 1)

MAE147 Vibrations (4) 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: MAE80; Mathematics 2E or equivalent. (Design units: 1)

MAE150 Mechanics of Materials (4) 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: Engineering E54. Prerequisite: MAE30. Same as Engineering MSE150. MAE150 and CEE150 may not both be taken for credit. (Design units: 1)

MAE151 Mechanical Engineering Design (4) F. 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. Prerequisites: MAE120, MAE145, and MAE170. (Design units: 3)

MAE152 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: MAE120, MAE150. Formerly Engineering MAE152A. (Design units: 2)

MAE156 Mechanical Behavior and Design Principles (4) S. Principles governing structure and mechanical behavior of materials, relationship relating microstructure and mechanical response with application to elasticity, plasticity, yielding, necking, creep, fatigue, and fracture of materials. Introduction to experimental techniques to characterize the properties of materials. Design parameters. Prerequisites: E54; MAE150 or MSE150. Same as MSE156. (Design units: 2)

MAE157 Lightweight Structures (4) S. 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: CEE150 or MAE150. Same as Engineering CEE157. (Design units: 2)

MAE158 Aircraft Performance (4) W. Fundamentals of flight theory applied to subsonic propeller and jet aircraft. Nature of aerodynamic forces, drag and lift of wing and fuselage, high-lift devices, level-flight performance, climb and glide performance, range, endurance, takeoff and landing distances, static and dynamic stability and control. Prerequisites: MAE80, MAE130A. (Design units: 2)

MAE159 Aircraft Design (4) S. Preliminary design of subsonic general aviation and transport aircraft with emphasis on layout, aerodynamic design, propulsion, and performance. Estimation of total weight and weight distribution, design of wings, fuselage, and tail, selection and location of engines, prediction of overall performance. Prerequisites: MAE112; MAE130A; MAE136; MAE158 or consent of instructor. (Design units: 4)

MAE162 Engineering Meteorology (4) F. Fundamentals and aspects of atmospheric sciences important to engineering and environmental problems. Basic physics and thermodynamics of the atmosphere; dispersion of pollutants. A design problem is included. Prerequisite: MAE91 or ChE60; MAE130A or CEE170 or ChE120A or consent of instructor. Same as Earth System Science 162. (Design units: 1)

MAE164 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. Prerequisites: MAE91; MAE130A or CEE170. (Design units: 2)

MAE170 Introduction to Control Systems (4) S. With laboratory. Feedback control systems. Modeling, stability, and systems specifications. Root locus, Nyquist, and Bode methods of analysis and design. Prerequisites: MAE80; MAE147 or MAE140 or equivalent. (Design units: 2)

MAE171 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: MAE170. (Design units: 2)

MAE172 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: MAE170, MAE180. (Design units: 3)

MAE175 Dynamics and Control of Aerospace Vehicles (4) S. Equations of motion, linearization, stability derivatives, and longitudinal and lateral modes of motion. Handling qualities, sensors and actuators, and effects of various feedbacks on stability and performance. Autopilot design. Prerequisite: MAE170. (Design units: 2)

MAE180 Instrumentation and Data Acquisition (4) F. 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: MAE106. (Design units: 3)

MAE183 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 2J. (Design units: 4)

MAE185 Numerical Analysis in Mechanical Engineering (4) S. 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 MAE10, Mathematics 3D; Mathematics 2E or equivalent. Only one course from Engineering MAE185, Engineering CEE185, and Mathematics 105A may be taken for credit. (Design units: 2)

MAE188 Engineering Design in Industry (4) F, 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)

MAE189A-B-C Senior Project (1-1-1) F, W, S. Group or individual supervised senior project of theoretical or applied nature involving design. Corequisite for 189A: MAE151A; for 189B: MAE151B. (Design units: 1-1-1)

MAE195 Seminars in Engineering (1 to 2) F, W, S. Seminars by individual faculty in major fields of interest. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

MAE198 Group Study (1 to 4) F, W, S. Group study of selected topics in engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. (Design units: varies)

MAE199 Individual Study (2 to 4) F, W, S. For undergraduate Engineering majors in supervised but independent reading, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. (Design units: varies)

MAEH199 Individual Study for Honors Students (1 to 5) F, W, S. Independent reading, research, or design under the direction of a faculty member or group of faculty members in Mechanical and Aerospace Engineering. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Open only to members of the Campuswide Honors Program who are Mechanical or Aerospace Engineering majors. May be repeated for credit. (Design units: varies)

GRADUATE

MAE200A 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.

MAE200B Engineering Analysis II (4) W. Review of ordinary differential equations, including Bessel and Legendre functions. Partial differential equations, including the diffusion equation, Laplace's equation, and the wave equation. Fourier series, Fourier and Laplace transforms and their applications. Introductions to functions of a complex variable and conformal mapping.

MAE201 Computer-Aided Geometric Modeling (3) W. Parametric representation of curves and surfaces. Boundary representation of solids, approximation techniques, constructive solid geometry. Prerequisite: MAE200A. *Not offered every year.*

MAE203 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. *Not offered every year.*

MAE204 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. *Not offered every year.*

MAE205 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. *Not offered every year.*

MAE206 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: MAE200A. *Not offered every year.*

MAE210 Advanced Fundamentals of Combustion (3) W. Premixed, nonpremixed, and heterogeneous reactions, with emphasis on kinetics, thermal ignition, turbulent flame propagation, detonations, explosions, flammability limits, diffusion flame, quenching, flame stabilization, and particle spray combustion. Prerequisite: MAE110. *Not offered every year.*

MAE215 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: MAE110. *Not offered every year.*

MAE216 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). Prerequisites: MAE91, MAE200A. *Not offered every year.*

MAE217 Generalized Thermodynamics (3) F. Generalized thermodynamics develops the laws of continuum thermodynamics from a set of plausible and intuitive postulates. The postulates are motivated qualitatively by a statistical description of matter and are justified by a posterior success for the resulting theory. Prerequisites: MAE91, MAE115 or equivalent. *Not offered every year.*

MAE221 Convective Heat Transfer (3) S. Laminar and turbulent heat transfer in external and internal flows. Similarity solutions. Integral methods. Free convection. Prerequisite: MAE230B. *Not offered every year.*

MAE223A Numerical Methods in Heat, Mass, and Momentum Transport (Laminar Flows) I (3) W. Introduction to the discretization of various types of partial differential equations (parabolic, elliptic, hyperbolic). Finite-volume discretization for one- and two-dimensional flows. Use of a two-dimensional elliptic procedure to predict sample laminar flows. Corequisite or prerequisite: MAE230A. *Not offered every year.*

MAE223B Numerical Methods in Heat, Mass, and Momentum Transport (Turbulent Flows) II (3) S. Introduction to turbulence. Reynolds-averaging of Navier-Stokes equations. Second-order closure of the average equations. Use of two-dimensional elliptic procedure to predict confined turbulent flows. Prerequisite: MAE223A. *Not offered every year.*

MAE224 Convective Mass Transfer (3) F. Concentrations, velocities, and mass fluxes. Mechanisms of mass transport and transport properties in multicomponent media. Mass transfer problems described by ordinary differential equations. Partial differential transport equations and some solutions of technical importance. Interphase mass transfer formulations and solutions. Prerequisite: MAE120. *Not offered every year.*

MAE226 Special Topics in Fluid and Thermal Sciences (1 to 3) F. Special topics of current interest in fluid mechanics, heat and mass transfer, multiphase flows, or combustion. Emphasis could be placed on theory, computational methods, or experimental techniques. Prerequisite: consent of instructor.

MAE230A Inviscid Incompressible Fluid Mechanics I (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: MAE130A.

MAE230B Viscous Incompressible Fluid Dynamics II (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: MAE230A.

MAE230C 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. Prerequisite: MAE230A or MAE230B.

MAE230D Theoretical Foundations of Fluid Mechanics (3) F. Review of tensor and vector calculus. Well-posed problems and boundary, initial, and interface conditions; strong and week 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: MAE230A, MAE230B. *Not offered every year.*

MAE231 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: MAE230A.

MAE232 Atmospheric Turbulence (3) S. Turbulent motion. Statistical and spectral methods. Homogeneous and shear flow problems. Turbulence in the atmosphere. Boundary layer, effects of buoyancy, rotation. Prerequisite: MAE230A. *Not offered every year.*

MAE233 Turbulent Free Shear Flows (3) W. Practical and theoretical aspects of turbulent free shear flows. Instability, global scaling laws, mixing, and noise generation in incompressible and compressible shear layers, jets, and wakes. Kelvin-Helmoltz instability, near- and far-field growth rates, effect of compressiblity, aeroacoustics of jets. Prerequisites: MAE200B, MAE230A, MAE230B.

MAE234 Flow Control (3) S. Concepts and techniques for active and passive flow control; optimal and sub-optimal turbulence control; flow-instability modes; free-shear and wall-bounded coherent structures; entrainment, mixing, and wake-signature control; skin-friction, pressure-drag, and noise reduction; flow control for aerospace and marine vehicles. Prerequisite: consent of instructor. *Not offered every year.*

MAE236 Nonequilibrium Gas Dynamics (3) W. Molecular description of fluid flow. Boltzmann equation. Chapman-Enskog expansion for flows with translational nonequilibrium. Shock structure. Inviscid flows with chemical and vibrational nonequilibrium. Prerequisite: MAE230C. *Not offered every year.*

MAE237 Computational Fluid Dynamics (3) S. Mathematical, physical, and computational fundamentals of computational fluid dynamics, numerical methods for solving the Euler and Navier-Stokes equations. Topics include: finite-difference and finite-volume discretization, time marching methods, von Neumann analysis, upwinding, flux splitting, TVD, and other high-resolution shock-capturing schemes. Prerequisite: MAE203, MAE230C, or consent of instructor.

MAE238 Experimental Fluid Dynamics (3) F. Concepts and techniques for measurement of fluid motion. Quantitative and qualitative flow visualization. Pitot probe, thermal anememeter, schlieren, shadowgraph, interferometer. Laser diagnostics, fluorescence, Rayleigh, Raman, Mie scattering. Laser-Doppler, particle-image, and image-correlation velocimetry. Three- and four-dimensional digital imaging. Prerequisite: consent of instructor.

MAE241 Dynamics (3) F. Kinematics and dynamics of three-dimensional motions. Lagrange's equations, Newton-Euler equations. Applications include robot systems and spinning satellites. Prerequisite: MAE147 or equivalent.

MAE242 Robotics (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: MAE80, MAE241. *Not offered every year.*

MAE243 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: MAE200A, MAE241. *Not offered every year.*

MAE244 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. *Not offered every year.*

MAE245 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: MAE200A, MAE244. *Not offered every year.*

MAE248 Differential Kinematics (3) S. An introduction to differential geometry of rigid motion in the plane, on the sphere, and in three-dimensional space; curvature properties of trajectories of points and lines; and local properties of constraint manifolds that define the workspace of kinematic connections. Prerequisite: MAE 200A.

MAE249 Micro Sensors and Actuators (4) S. Introduction to the technology of Micro-Electro-Mechanical Systems (MEMS). Fundamental principles and applications of important microsensors, actuation principles on microscale. Introduction to the elements of signal processing; processing of materials for micro sensor/actuator fabrication; smart sensors and microsensor/microactuator array devices. Same as ECE249.

MAE260 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: One course selected from Chemistry 245, Earth System Science 202, Engineering MAE164, Engineering MAE261, or consent of instructor. Same as Chemistry 241. *Not offered every year.*

MAE261 Air Quality Modeling (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: MAE230A and MAE230B or consent of instructor; Engineering MAE10 or equivalent FORTRAN knowledge. *Not offered every year.*

MAE264 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: MAE130A, MAE130B. *Not offered every year.*

MAE270A Linear Systems I (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: MAE170 or ECE140A.

MAE270B 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: MAE270A. *Not offered every year.*

MAE271 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: MAE270A. *Not offered every year.*

MAE272 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: MAE270A. *Not offered every year.*

MAE273 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. Prerequisites: MAE241, MAE270A. Formerly Engineering ME273. *Not offered every year.*

MAE274 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. *Not offered every year.*

MAE275 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: MAE270B. *Not offered every year.*

MAE276 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: MAE200A, MAE270A. *Not offered every year.*

MAE277 Introduction to Neural Control Systems (3) F. Basic models and learning rules of artificial neural networks: perceptrons, multilayer neural networks and backpropagation, Hopfield networks, Kohonen networks, CMAC networks. Neural networks in system identification and control. Introduction to Fuzzy control systems.

MAE279 Special Topics in Mechanical Systems (3) W. Selected topics of current interest in mechanical systems. Topics include robotics, kinematics, control, dynamics, and geometric modeling. Prerequisites: MAE241, MAE270A. May be repeated for credit as topics vary. *Not offered every year.*

MAE281 Fundamentals of Digital Signal Analysis (3) F. 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: MAE200A, MAE200B. *Not offered every year.*

MAE284 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. *Not offered every year.*

MAE294 M.S. Project (3) F, W, S. Tutorial in which master's-level students taking the comprehensive examination option undertake a master's-level research project. May be repeated for credit.

MAE295 Seminars in Engineering (1 to 4) F, W, S. Seminars by individual faculty in major fields of interest. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

MAE296 Master of Science Thesis Research (4 to 12) F, W, S. Individual research or investigation conducted in the pursuit of preparing and completing the thesis required for the M.S. in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

MAE297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S. Individual research or investigation conducted in the pursuit of preparing and completing the dissertation required for the Ph.D. in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

MAE298 Seminars in Mechanical Engineering (1) F, W, S. Presentation of advanced topics and reports of current research efforts in mechanical engineering. Required of all graduate students in mechanical engineering. Satisfactory/Unsatisfactory grading only. May be repeated for credit as topics vary.

MAE299 Individual Research (1 to 12) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit.

SCHOOL OF HUMANITIES

Karen R. Lawrence, **Dean**

143 Humanities Instructional Building
Undergraduate Counseling: (949) 824-5132
Graduate Counseling: (949) 824-4303
World Wide Web: http://www.humanities.uci.edu/

The School of Humanities comprises three fundamental areas of knowledge: history; literature, film, and the arts; and philosophy. The intellectual activity of departments and programs in the School reflects the discrete concerns of these basic disciplines and intersections among them. By expanding our knowledge in these three areas and developing skills in rhetoric, expository composition, and foreign languages, humanists influence the fundamental techniques of communication used throughout the modern university and our whole society. They analyze and question those techniques and examine the web of cultural beliefs in which they are practiced.

At the core of the educational mission of the humanities is the goal of imparting to students critical tools of analysis, ways of seeing, knowing, explaining, describing, and understanding, that will allow them to comprehend the world around them. Consider some of the challenges that we all face: the pressures created by demographic change, rapid economic expansion, and increased ethnic and cultural diversity; the development of new technological forms, particularly those related to computers and the Internet; and the increasingly complex problem of human interaction with the environment. Equipping students to understand and analyze such phenomena is precisely what a liberal education in the humanities accomplishes. In the words of a "Manifesto for the Humanities," prepared for the President of the University of California, it is humanities that provide "the ability to express oneself clearly and accurately; the skill of critical evaluation, both of ideas and actions; the courage to make choices based on shared values and priorities; the opportunity to conduct an intensive conversation with the traditions, present and past, that help make us who we are, and above all, who we will be; and as a result, the ability to understand and make sense of other people and their cultures." Humanistic inquiry is in no way isolated from the "real world," cordoned off in some ivory tower; rather its central goal is to equip students to enter into that real world as critically thinking citizens.

Because language is the humanist's essential tool and the traditional medium of historical record, philosophical speculation, and literary creation and criticism, the School of Humanities places special emphasis on language and training in composition. The campuswide Writing Program is housed in the School of Humanities, as are our distinguished programs in creative writing and the Program in English as a Second Language.

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.

A crucial part of the School's curriculum is the Humanities Core Course, which integrates the study of philosophy, literature, film and the arts, and history along with lower-division writing. Interdisciplinary studies are also an essential feature of the Humanities Honors Program and programs in Film Studies and Comparative Literature. The Interdisciplinary Programs in African-American Studies, Asian American Studies, Latin American Studies, and Women's Studies are also located in the School. With faculties that draw on the Social Sciences as well, these programs are excellent examples of how the Humanities reaches across the boundaries of disciplinary knowledge. In addition, the interdisciplinary minor in Religious Studies is affiliated with the School of Humanities.

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. Students from the School of Humanities at UCI have moved into business, the law, education, politics, public policy, academia, and journalism. Employers in all sectors are placing increasing emphasis on the recruitment of college graduates who can write and think. These skills are ultimately more important to many employers than a specific form of technical training, and it is these skills that are imparted most effectively in the School of Humanities. For students who leave the School with a solid grounding in critical analysis, research, and communication, the sky is the limit.

DEGREES

African-American Studies	B.A.
Asian American Studies	B.A.
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.
Visual Studies	M.A., Ph.D.
Women's Studies	B.A.

* The degree program in Russian is not open to new students at this time.

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 51).

HUMANITIES CENTER

172 Humanities Instructional Building; (949) 824-1948
John H. Smith, **Director**

Founded on the principle that humanistic inquiry plays a vital role in debates within and beyond academia, the UCI Humanities Center has three missions: to provide resources for research in the Humanities; to foster interaction among scholars; and to encourage dialogue between the UCI School of Humanities and the non-academic local community.

The Humanities Center fulfills these three missions through a variety of activities. It funds both individual and collaborative research projects of UCI faculty and graduate students; it houses fellows in residence; it initiates workshops, seminars, and lectures for the UCI academic community to share research results; it organizes and supports lectures and conferences, often with the UC Humanities Research Institute and various departments, to invite scholars to present their work; it hosts public forums, reading groups, and on-campus presentations for members of the non-academic community; and it produces and distributes its tri-annual newsletter, *Between the Lines*.

HUMANITIES OUT THERE (H.O.T.) PROGRAM

168 Humanities Instructional Building; (949) 824-8119
Julia Reinhard Lupton, **Director**

H.O.T. is an outreach program between UCI's School of Humanities and local schools. The program consists of a series of five-week workshops on selected topics in the humanities. Each quarter, there are at least twenty-five workshops on at least five different topics, including World Mythology, Creative Writing, Telemedia Literacy, and Literacy through Literature. Each workshop sends out a team of five or more undergraduates to a K–12 classroom, supervised by faculty and advanced graduate students in the humanities.

Requirements for undergraduates include: attending at least five training sessions at UCI; attending at least five tutoring sessions at a local school; submitting two electronic journals on the tutoring experience; and writing a three- to five-page paper with an academic focus. Undergraduates can earn two Pass/Not Pass units of H.O.T. credit each quarter.

HUMANITIES INSTRUCTIONAL RESOURCE CENTER AND COMPUTING FACILITY

The Humanities Instructional Resource Center (HIRC) and the Humanities Computing Facility (HCF) share space in Humanities Hall and provide comprehensive technology support for instruction, research, and faculty and staff development. HIRC and HCF also serve as the center for innovative technology-mediated instruction within the School of Humanities.

HIRC services and facilities include video and audio tape libraries, and audio production. HCF includes the computer laboratories, fee-based laser printing, video editing, and computing consultation. Both facilities provide technology-related research and development assistance for faculty, graduate, and undergraduate students. HCF houses two PC laboratories, one Macintosh laboratory, one drop-in laboratory (with both Macs and PCs) and one language laboratory. The facility has more than 100 stations. HCF also houses one analog and three digital video editing bays, a software library, and a wide range of computer services (scanning, document conversion, workshops, and more).

Both HCF and HIRC laboratories provide a wide variety of instructional resources including, among others, multimedia applications and development stations, foreign language word processing, Web browsing (including support for Chinese, Japanese, and Korean), and language learning materials. All laboratories are connected to a central server and to the campus backbone for access to the Internet, MELVYL®, and other research resources. The laboratories are available to Humanities students, instructors, and staff for class instruction and drop-in purposes.

Additional information may be obtained from the HCF Computer Consultant's Office, 213 Humanities Hall, telephone (949) 824-8493, or the HIRC main offices, 269 Humanities Hall, telephone (949) 824-6344.

Undergraduate Programs

HUMANITIES UNDERGRADUATE STUDY

143 Humanities Instructional Building; (949) 824-5132
World Wide Web: http://www.humanities.uci.edu/undergrad/
Robert G. Moeller, **Associate Dean**

In addition to 18 majors and 22 minors, the School also offers a formal concentration in Medieval Studies and courses in Italian, Portuguese, and Russian.

The academic counselors in the Humanities Undergraduate Counseling Office, located in 143 Humanities Instructional Building, help all students in planning a program of study. Transfer students in particular need to consult an academic counselor to determine major requirements. Students who expect to pursue graduate study also should consult with appropriate faculty members to ensure proper preparation.

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 participating as mentors for new Humanities majors, 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 disadvantaged 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. 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. Call (949) 824-5132 for additional information.

HUMANITIES HONORS PROGRAM

143 Humanities Instructional Building; (949) 824-5132
Richard L. Regosin, **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 (949) 824-5132.

CAMPUSWIDE HONORS PROGRAM

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years: For more information contact the Campuswide Honors Program, 1200 Student Services II; telephone (949) 824-5461; e-mail: honors@uci.edu; World Wide Web: http://www.honors.uci.edu/.

HUMANITIES INTERNSHIP PROGRAM

170 Humanities Instructional Building; (949) 824-8119
Robert Moeller, **Director**

The Humanities Internship Program is designed to bring highly qualified Humanities majors together with public sector employers and nonprofit companies in the Orange County area who are looking for employees with excellent skills in writing and communication. Local employers who participate in the program believe that Humanities students' education in critical thinking, writing, communication, and analysis equip them to be successful employees in their firms.

Most internships last two quarters. Interns work 10–15 hours a week for hourly salaries of $8–10. (No course credit is earned.) Employers offer management-level supervisors to student interns and thus, an intern does no menial tasks, but is instead involved in a meaningful aspect of the firm's ongoing business. In many cases, the internship relationship becomes the basis for long-term employment with the firm.

Interns participate in several quarterly meetings with a program coordinator at UCI to discuss their work experiences and benefit from one another's insights. At the end of the internship, the student provides an assessment of the experience. The program coordinator also conducts on-site visits with the interns and their management supervisors.

The Internship Program is open to all Humanities majors who are in good academic standing and will have completed at least three quarters of academic work at UCI by the end of the quarter in which they are selected for the program. Only students who will have completed the Humanities Core Course (or the Core Course substitution) by the end of that quarter will be eligible.

Applications are available in the Humanities Undergraduate Study Office, 143 Humanities Instructional Building, in mid- to late-winter quarter. The deadline for submission of all application materials is early May.

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 54–59.

School Requirements

Satisfactory completion of the following, which must be taken for *letter grades:* Humanities 1A-B-C, taken in the freshman year*; 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.

*Transfer students in all majors in the School of Humanities, except Asian American Studies and Women's Studies, may substitute for the Humanities Core Course appropriate course work in English composition, literature, history, and philosophy. Substitution is by petition; apply in the Humanities Undergraduate Counseling Office. See the Asian American Studies and Women's

Studies sections for specific information about substitution courses for these majors.

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. Placement tests are required for the following languages: Chinese, French, Japanese, Korean, and Spanish. Contact the UCI Testing Office for information; telephone (949) 824-6207; e-mail: testoff@uci.edu; World Wide Web: http://www.testingoffice.uci.edu/.

For other foreign languages, 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.

Foreign Language Advanced Placement Credit. Students cannot earn units or grade points at UCI in courses from which they have been exempted on the basis of Advanced Placement credit. However, since Advanced Placement awards a maximum of 8 units for scores of 3, 4, and 5, students may elect to take 2C or the equivalent for credit.

Native Speakers of Languages Other Than English. A native speaker of a 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 generally 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, Humanities students are not allowed to earn credit for off-campus internships. However, if a department or program determines that the internship is academically appropriate and promotes the student's academic goals, the student may take the internship as Independent Study and credit will be given.

A maximum of four units total may be earned for internships; however, the units may not be counted toward the student's major requirements. (No credit is given for *paid* internships, such as those offered through the Humanities Internship Program.) The sponsoring department or program and the instructor will in all cases require a substantial academic product, such as a paper, growing out of the internship.

A student who wishes to seek approval for an unpaid off-campus internship and earn course credit must file an Independent Study form with the Humanities Undergraduate Study Office prior to beginning the internship.

Graduate Programs

HUMANITIES GRADUATE STUDY

176 Humanities Instructional Building; (949) 824-4303
Leslie W. Rabine, **Associate Dean**

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.

INTERDISCIPLINARY PROGRAM IN AFRICAN-AMERICAN STUDIES

300A Murray Krieger Hall; (949) 824-2376
John Carlos Rowe, **Director (Interim)**

Participating Faculty

Lindon W. Barrett, Ph.D. University of Pennsylvania, *Associate Professor of English* (critical theory, African-American cultural studies)

Rae Linda Brown, Ph.D. Yale University, *Department Chair and Associate Professor of Music* (history, American musics)

Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Professor of History* (American culture, African-American history)

Thelma Foote, Ph.D. Harvard University, *Associate Professor of History and African-American Studies* (early America, African-American history)

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)

Ulysses Jenkins, Jr., M.F.A. Otis Parsons Art Institute, *Associate Professor of Studio Art* (film as a primary medium)

Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Assistant Professor of Women's Studies and Comparative Literature* (Asian-American literature and culture, feminist theory, ethnic studies, gender)

Ketu H. Katrak, Ph.D. Byrn Mawr College, *Director and Professor of Asian American Studies and Professor of English and Comparative Literature* (Asian American literature, post-colonial literature)

Claire Jean Kim, Ph.D. Yale University, *Assistant Professor of Asian American Studies and Political Science* (racial and ethnic politics, protest and social movements, contemporary political theory)
Steven Mailloux, Ph.D. University of Southern California, *Professor of English* (rhetoric, critical theory, American literature, law and literature)
Donald McKayle, *Choreographer/Director* (concert, theatre, film, television), *Graduate Choreography Advisor, Artistic Director of UCI Dance, and Professor of Dance* (choreography, modern dance)
James Newton, B.M. California State University, Los Angeles, *Professor of Music and Director of the Charles Mingus Jazz Ensemble* (jazz studies, composition)
Leslie W. Rabine, Ph.D. Stanford University, *Professor of French* (nineteenth-century French literature and women's studies)
John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Director (Interim) of African-American Studies and Professor of English* (American literature, modern literature, critical theory, comparative literature)
Gabriele Schwab, Ph.D. University of Konstanz, *Director of the Critical Theory Institute and Professor of English and Comparative Literature* (modern literature, critical theory, psychoanalysis, comparative literature)
Pat Ward-Williams, M.F.A. Maryland Institute College of Art, *Associate Professor of Studio Art* (photography, installation)
Robyn Wiegman, Ph.D. University of Washington, *Director of the Program in Women's Studies and Associate Professor of Women's Studies, African-American Studies, and English* (feminist theory, sexuality studies, American cultural studies, race studies)
Judith A. Wilson, Ph.D. Yale University, *Assistant Professor of African-American Studies and Art History* (African-American visual culture, post-colonial art and theory, race representation in American visual culture)

African-American Studies is an interdisciplinary program which offers undergraduate students an opportunity to study those societies and cultures established by the people of the African diaspora. The program's curriculum encourages students to investigate the African-American experience from a variety of disciplinary perspectives and theoretical approaches. Among the topics explored in the course offerings are the process of colonization and the forced migration of African people, the positionality of African people in the racialized symbolic and social orders of the western hemisphere, the rhetoric produced by and about African people, and the cultural and aesthetic values associated with "blackness" and "Africanness." The Program offers a major leading to the B.A. degree in African-American Studies and a minor.

Descriptions for courses offered by the departments are available in the academic unit sections of the *Catalogue* and on the Program Web site at http://www.hnet.uci.edu/afam/.

CAREER OPPORTUNITIES

UCI graduates with a B.A. degree in African-American Studies enhance their chances of success in the job market and in the highly competitive arena of graduate and professional school admissions, especially in the fields of medicine and other health professions, law, and business. Employers and admissions officers understand that many of their employees and graduates will one day work in communities with significant African-American populations, and for this reason they give due consideration to applicants who have in-depth knowledge of African-American culture.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See pages 203–204.

Requirements for the Major

A. Three-quarter core sequence, African-American Studies 40A, 40B, 40C; and African-American Studies 141.

B. Any three lower-division courses selected from Asian American Studies, 60A, B, C (Introduction to Asian American Studies I, II, III), Social Science 61, 62, 63 (Introduction to Chicano/Latino Studies I, II, III), Women's Studies 50A (Gender and Feminism in Everyday Life), 50B (Reproducing and Resisting Inequality), 50C (Gender and Popular Culture).

C. Six courses, five of which must be upper-division, distributed as follows from the lists below: two courses from Historical, Political, and Social Formations; two courses from Discourses; one course from Expressive Forms; and one course from Genders and Sexualities.

D. Four upper-division electives selected from an approved list available in the program office.

Residence Requirement for the Major: A minimum of five upper-division courses required for the major must be completed successfully at UCI.

Examples of courses which have recently been offered for satisfaction of requirement C include the following:

Historical, Political, and Social Formations: Anthropology 164A (African Societies), 164K (South Africa); History 144A (Early American Cultural and Intellectual History), 144B (Nineteenth-Century American Cultural and Intellectual History), 148A (Law and Minorities in the United States), 148B (Topics in Multicultural U.S. History*); Political Science 124A (The Politics of Protest in the U.S.), 154C (Comparative Politics: Four Nations, Three Continents); Psychology and Social Behavior P124D (Human Development in Cross-Cultural Perspective); Social Science 70A (U.S. Ethnic and Racial Cultures), 70C (Comparing Cultures), 170E (Society and Culture), 170F (History and Culture), 172B (Afro-American Culture).

Discourses: English and Comparative Literature CL 105 (Multicultural Topics in Comparative Literature*), E 105 (Multicultural Topics in English-Language Literature*); French 120 (Twentieth-Century French Literature*), 125 (African Literature of French Expression); History 144E (Racial Thought in America); Women's Studies 162 (Racism and Sexism).

Expressive Forms: African-American Studies 150 (Special Topics in African-American Studies‡); Art History 165 (Studies in American Art*); Dance 110 (Ethnic Dance†); Film Studies 198 (when topic is: Melodrama: Black/White); Music 41 (Great Composers*), 78A, B (History of Jazz), 145 (Studies in Twentieth-Century Music*); Social Science 70B (Introduction to Expressive Forms in American Society), 70T (The History of Minorities in American Films), 176A (Afro-Latin American Music); Studio Art 100 (Special Topics in Studio Art*), 121 (Issues in Race and Representation*), 123 (Issues in Cultural Display*), 137 (Projects in Autobiography, Personal Narratives, and Community Histories*).

Genders and Sexualities: African-American Studies 150 (Special Topics in African-American Studies‡); Women's Studies 163 (Women of Color), 180 (Gender, Feminism, and Anthropology*), 181 (Gender, Feminism, and Cognitive Psychology*).

NOTE: Although some courses may be included in one or more of the lists above as well as in the elective list, they will count only once toward satisfaction of the program requirements.

Students must meet on a quarterly basis with their designated faculty advisor who will review their plan of study.

* When topic is on African-American or African diasporic topics.
† Two quarters, when content is on African-American or African diasporic topics.
‡ When topic is appropriate.

Requirements for the Minor

Completion of African-American Studies 40A, 40B, 40C and four courses (16 units) selected from the Historical, Political, and Social Formations; Discourses; Expressive Forms; and Genders and Sexualities lists or from the elective list available in the program office.

Students select their courses in consultation with their designated faculty advisor. No more than two of these courses may be in the student's major department.

Residence Requirement for the Minor: Four upper-division courses required for the major must be completed successfully at UCI. Two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

Courses in African-American Studies

LOWER-DIVISION

10 Gospel Choir (2). Learning about and performing American spirituals and gospel songs. Approach is one of cultural scholarship rather than "musically straight." Performances are given throughout the year. May be repeated for credit. Same as Music 7.

40A, B, C African American Studies I, II, III (4, 4, 4). Introduction to the main contours of the African-American experience, from the importation of Africans into the Americas to the present. **40A:** Focus on the unique expressions of African-American society and culture. Same as History 15B. **40B:** Development, characteristics, and significant ideas of "race" in America, from colonial times into the twentieth century. **40C:** African-American culture and identity. **(IV, VII-A)**

UPPER-DIVISION

110 Historical, Political, and Social Formations (4). Topics which promote critical investigation into the historical, political, and social formations associated with the African diaspora. May be repeated for credit as topics vary.

111A African-American Art: 1650–1900 (4). In Anglo-America, an African visual heritage tied to "pagan" beliefs collided with an iconclastic Protestant culture. Against the odds, African-American architecture, crafts, decorative arts, painting, sculpture, and photography emerged.

111B African-American Art: 1900–Present (4). From the "New Negro" to black cybernauts, the twentieth century has seen an explosion of African-American visual culture. What artistic and social forces produced a Kara Walker or a Jean Michel Basquiat? Is their art ethnically distinct? Aesthetically valid?

130 Special Topics in Discourses (4). Inscripted systems of ideology, knowledge, and value in literature, philosophy, and science. May be repeated for credit as topics vary.

131 Race and Visual Representations (4). Why is it good to be "color blind" about race? How do race and vision intersect in our increasingly visual culture? These are some of the questions to be explored via theories of representation and histories of art, fashion, film, and photography.

140 New World Slave Societies and Their Legacies (4). Provides a comparative examination of New World slave societies in the Americas—Mexico, Brazil, Barbados, South Carolina, Jamaica, Haiti, Cuba, and others. Emergence of racial slavery; resistance to European domination; interpenetration of European, African, and Amerindian cultures; legacies of racial slavery.

141 The Black Protest Tradition (4). History and discourses of the black protest tradition. Traces the emergence of black protest against racial slavery and white supremacy from the early colonial period to the present and the complex elaboration of identity politics within black communities in the twentieth century. Prerequisites: satisfactory completion of the lower-division writing requirement; upper-division standing.

150 Special Topics in African-American Studies (4). Designed to provide students with an opportunity to do advanced work in African-American studies. May be repeated for credit as topics vary.

160 Special Topics in Expressive Forms (4). Expressions of ideology, knowledge, and value in media (e.g., dance, film, music, and others). May be repeated for credit as topics vary.

170 Special Topics in Genders and Sexualities (4). Expressions of genders and sexualities across the spectrum of African-American experience and creativity. May be repeated for credit as topics vary.

198 Directed Group Study (1 to 4). Special topics through directed reading. Paper required. Prerequisite: consent of instructor. May taken for credit for a total of 24 units.

199 Independent Study (1 to 4). Investigation of special topics through directed reading. Paper required. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

DEPARTMENT OF ART HISTORY

85 Humanities Instructional Building; (949) 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, *Professor of Art History* (modern European art, critical theory)
Judy C. Ho, Ph.D. Yale University, *Associate Professor of Art History* (Chinese art, critical theory)
David Joselit, Ph.D. Harvard University, *Associate 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)
Judith A. Wilson, Ph.D. Yale University, *Assistant Professor of African-American Studies and Art History* (African-American visual culture, post-colonial art and theory, race representation in American visual culture)
Bert Winther-Tamaki, 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)

Undergraduate Program

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 on 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 54–59.

School Requirements: See pages 203–204.

Departmental Requirements for the Major

One year-long introductory sequence (either Art History 40A, 40B, 40C or 42A, 42B, 42C); eight upper-division courses in art history, with a minimum of one course selected from each of the following areas: Ancient history (Art History 100-109), Medieval history (110-119), Renaissance/Baroque history (120-129), Modern history (130-149 and 183), Asian history (150-164), and American history (165); Art History 190; two quarters of Art History 198.

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 completed successfully 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 completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Graduate Study

In conjunction with the Program in Film Studies, the Department of Art History offers a graduate program in Visual Studies. A program description may be found at the end of the School of Humanities section. Graduate courses satisfying the requirements of the program are listed there, as well as below and in the Film Studies section.

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.

40 History of Western Art. A year-long survey of art and culture in the West from prehistory to the present.

40A Ancient (4) F. An overview of prehistoric, Egyptian, Greek, and Roman art. Considers how and why the peoples of antiquity created art and architecture, as well as the significance within its social, religious, and historical contexts. **(IV, VII-B)**

40B Medieval and Renaissance (4) W. Focuses on the art of the Mediterranean area and Europe between ca. A.D. 350 and 1600. By means of movements and artists, examines the cultural identities of the Christian, Islamic, and early modern worlds. **(IV, VII-B)**

40C Baroque and Modern (4) S. The visual arts from the seventeenth to the twentieth centuries. Explores the changing social purposes and meaning of painting, sculpture, and architecture in relation to historical events and to the artists who made them. **(IV, VII-B)**

42A, B, C History of Asian Art (4, 4, 4) F, W, S. An introductory survey of the arts and architecture of Asia including China, Japan, Korea, and India. **(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.

80 Modern Art and Society. A one-year survey of art and other visual artifacts from the seventeenth century to the present.

80A Art, Class, and Nation in the Seventeenth and Eighteenth Centuries (4) F. Surveys how modern art in Europe emerged alongside new conceptions of class and nation. Investigates the manner in which art, far from simply recording these changes, made them visual form. **(IV, VII-B)**

80B Rationalized Life and Vision in the Nineteenth Century (4) W. Explores how artworks, the built environment, and even vision responded and contributed to industrialization. Attention paid to new visual forms, such as advertisements and photography, that arose from these distinctly modern forces. **(IV, VII-B)**

80C Vision and Self in the Twentieth Century (4) S. Examines how the practices of art, economics, and politics have been closely linked to the development of new accounts of the self within society over the last one hundred years. **(IV, VII-B)**

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, Prehistoric, and Etruscan art of the Mediterranean area treated with specific reference to relevant cultural and historical settings. Specialized courses in Greek and Roman art are also taught. Concurrent with Art History 200.

103 Studies in Greek Art (4) F, W, S. Topics in Greek art, architecture, and topography from the Prehistoric period through the end of the fourth century B.C.E.

107 Studies in Roman Art (4) F, W, S. Topics in Hellenistic and Roman art and architecture; stresses historical and political background.

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 or Humanities 110 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 European 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 233A, B, C, D.

133A European Art: 1789–1851 (4).

133B European Art: 1851–1907 (4)

133C European Art: 1907–1940 (4)

133D Topics in Modern European Art (4). Varies with each offering. Consult with the instructor for specific topic. May be repeated for credit as topics vary.

140 Studies in Contemporary Art F, W, S. Varying topics within the period 1940 to the present. Works of art are studied as cultural, social, and political practices. Concurrent with Art History 240A, B, C.

140A History of Contemporary Art (4)

140B Issues of Contemporary Art (4)

140C Theories of Contemporary Art (4)

150 Studies in Asian Art (4) F, W, S. Topics include visual studies in China, Japan, Korea, and India. Concurrent with Art History 250.

152 Studies in Chinese Art and Religion (4) F, W, S. A study of the rich archaeological finds in mainland China (including tombs and temples) and the development of religious beliefs from the Neolithic through the imperial periods.

153 Studies in Early Chinese Painting (4) F, W, S. An examination of the major traditions in painting from the fourth through the thirteenth centuries and the parallel developments in art theory.

154 Studies in Later Chinese Painting (4) F, W, S. New developments in Yuan, Ming, and Qing, through modern periods.

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 Later Japanese Art and Design. Explores stylistic and technical developments in Japanese visual culture. A cross-section of media such as architecture, crafts, painting, photography, and sculpture are studied in relation to Japanese social and political history. Concurrent with Art History 262A, B, C.

162A Japanese Art: 1615–1868 (4). (VII-B)

162B Japanese Art: 1868–1945 (4). (VII-B)

162C Japanese Art: 1945–Present (4). (VII-B)

163 Asian American Art History (4) F, W, S. Investigation of the Asian American experience expressed by art and visual culture through the twentieth century. Art by Asian Americans of diverse backgrounds as well as the history of visualization of Asian identities in American art/visual culture. Concurrent with Art History 263. **(VII-A)**

165 Studies in American Art F, W, S. Varying topics within the period 1620 to 1950. Works of art are studied in their cultural, social, and political contexts. Concurrent with Art History 265A, B, C, D.

165A American Art: 1620–1800 (4)

165B American Art: 1800–1900 (4)

165C American Art: 1900–1950 (4)

165D Topics in American Art (4). Varies with each offering. Consult with instructor for specific topic. May be repeated for credit as topics vary.

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. Concurrent with Art History 280.

183 Studies in the History of Photography F, W, S. Varying topics within the history of photography from the early nineteenth century to the present. Photographic practice studied in relation to art history, cultural history, and social history. May be repeated for credit as topics vary. Concurrent with Art History 283A, B, C.

183A Nineteenth-Century Photographic History (4)

183B Twentieth-Century Photographic History (4)

183C Selected Topics in Photographic History (4). Examples: documentary; pictorialism and art photography; photomontage, photographic books.

185 Topics in Visual Studies (4) F, W, S, Summer. Interdisciplinary topics on the cultural analysis of visual artifacts and practices. May be repeated for credit as topics vary.

190 Practicum for Majors (4) W. Theory and practice of art history with emphasis on formal and social models of analyzing and writing about art. Prerequisite: 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. In addition to the courses below, graduate courses satisfying the requirements of the graduate program in Visual Studies are listed in the Visual Studies and Film Studies sections of the *Catalogue*. Graduate students may also enroll concurrently in any upper-division lecture class with the approval of the instructor.

200 Studies in Ancient Art (4). Topics in Egyptian, Prehistoric, and Etruscan art of the Mediterranean area treated with specific reference to relevant cultural and historical settings. Specialized courses in Greek and Roman art are also taught. 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 European 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, B, C, D.

233A European Art: 1789–1851 (4).

233B European Art: 1851–1907 (4)

233C European Art: 1907–1940 (4)

233D Topics in Modern European Art (4). Varies with each offering. Consult with the instructor for specific topic. May be repeated for credit as topics vary.

240 Studies in Contemporary Art F, W, S. Varying topics within the period 1940 to the present. Works of art are studied as cultural, social, and political practices. Concurrent with Art History 140A, B, C.

240A: History of Contemporary Art (4)

240B: Issues of Contemporary Art (4)

240C: Theories of Contemporary Art (4)

250 Studies in Asian Art (4) F, W, S. Topics include visual studies in China, Japan, Korea, and India. Concurrent with Art History 150.

262 Later Japanese Art and Design. Explores stylistic and technical developments in Japanese visual culture. A cross-section of media such as architecture, crafts, painting, photography, and sculpture are studied in relation to Japanese social and political history. Concurrent with Art History 162A, B, C.

262A Japanese Art: 1615–1868 (4)

262B Japanese Art: 1868–1945 (4)

262C Japanese Art: 1945–Present (4)

263 Asian American Art History (4) F, W, S. Investigation of the Asian American experience expressed by art and visual culture through the twentieth century. Art by Asian Americans of diverse backgrounds as well as the history of visualization of Asian identities in American art/visual culture. Concurrent with Art History 163.

265 Studies in American Art F, W, S. Varying topics within the period 1620 to 1950. Works of art are studied in their cultural, social, and political contexts. Concurrent with Art History 165A, B, C, D.

265A American Art: 1620–1800 (4)

265B American Art: 1800–1900 (4)

265C American Art: 1900–1950 (4)

265D Topics in American Art (4). Varies with each offering. Consult with instructor for specific topic. May be repeated for credit as topics vary.

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 Studies in the History of Photography F, W, S. Varying topics within the history of photography from the early nineteenth century to the present. Photographic practice studied in relation to art history, cultural history, and social history. May be repeated for credit as topics vary. Concurrent with Art History 183A, B, C.

283A Nineteenth-Century Photographic History (4)

283B Twentieth-Century Photographic History (4)

283C Selected Topics in Photographic History (4). Examples: documentary; pictorialism and art photography; photomontage, photographic books.

399 University Teaching (4) F, W, S. Limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

INTERDISCIPLINARY PROGRAM IN ASIAN AMERICAN STUDIES

300 Murray Krieger Hall; (949) 824-2746
Ketu H. Katrak, **Director**

Core Faculty

Yong Chen, Ph.D. Cornell University, *Associate Professor of History and Asian American Studies* (Asian American history)

Dorothy Fujita Rony, Ph.D. Yale University, *Assistant Professor of Asian American Studies and History* (Asian American, Filipino American history)

Ketu H. Katrak, Ph.D. Bryn Mawr College, *Director and Professor of Asian American Studies and Professor of English and Comparative Literature* (Asian American literature, post-colonial literature)

Claire Jean Kim, Ph.D. Yale University, *Assistant Professor of Asian American Studies and Political Science* (racial and ethnic politics, protest and social movements, contemporary political theory)

Karen Leonard, Ph.D. University of Wisconsin, *Professor of Anthropology* (social history of India, caste, ethnicity and gender, Asian Americans in the United States)

John M. Liu, Ph.D. University of California, Los Angeles, *Associate Professor of Social Sciences and of Asian American Studies* (race/ethnic/minority relations; economy and society)

Glen Mimura, M.A. University of California, Santa Cruz, *Acting Assistant Professor of Asian American Studies* (interrelationships of the visual to the cultural, emphasis on race, gender, and ethnicity)

Affiliated Faculty

Chungmoo Choi, Ph.D. Indiana University, *Director of the Emphasis in Critical Theory and Associate Professor of East Asian Languages and Literatures*

Hu Ying, Ph.D. Princeton University, *Assistant Professor of East Asian Languages and Literatures*

Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Assistant Professor of Women's Studies and Comparative Literature*

Kyung Hyun Kim, Ph.D. University of Southern California, *Assistant Professor of East Asian Languages and Literatures*

Sanjoy Mazumdar, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Social Ecology*

Yong Soon Min, M.F.A. University of California, Berkeley, *Associate Professor of Studio Art*

Lois Takahashi, Ph.D. University of Southern California, *Associate Professor of Social Ecology*

Bert Winther-Tamaki, Ph.D. Institute of Fine Arts, New York University, *Assistant Professor of Art History*

Asian American Studies is an interdisciplinary program which examines the historical and contemporary experiences of Asians after their arrival in the United States. The curriculum 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 Program offers a major leading to the B.A. degree in Asian American Studies, a minor, and a graduate emphasis.

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.

Scholarship Opportunities. The Ching-Suei Su Endowed Memorial Scholarship is awarded annually to sophomores or juniors who are majoring in Asian American Studies, East Asian Languages and Literatures, or Linguistics (with an emphasis on an East Asian language) and who demonstrate academic excellence and campus or community service.

CAREER OPPORTUNITIES

Many career opportunities exist for students who graduate with a B.A. degree in Asian American Studies, such as service with national and international organizations which seek knowledge of

American multicultural society in general, and of Asian American peoples and cultures in particular; positions as area specialists with state and federal government agencies; careers in the private sector with corporations or private organizations which have a significant portion of their activities in the U.S. and the Pacific Rim; and positions of service and leadership within Asian American communities. Students may also continue their education and pursue professional or graduate degrees.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See pages 203–204.

Humanities Core Course substitution for transfer Asian American Studies majors: Four semester courses or six quarter courses equivalent to the following UCI course work: Writing 39B and 39C; a three-quarter Humanistic Inquiry sequence; and one additional lower-division Humanistic Inquiry course. No Asian American Studies courses may count toward the Core Course substitution.

Requirements for the Major

A. Five core courses: Asian American Studies 60A, 60B, 60C, 100A, 100B.

B. Ten upper-division electives (two from each of the following areas):
Asian American Studies 110-129 (Humanities/Arts)
Asian American Studies 130-149 (Social Science/Social Ecology)
Asian American Studies 151-160 (Asian American Sub-groups)
Asian American Studies 161-170 (Ethnic/Race/Gender Relations)

C. One course selected from Asian American Studies 171-180 (History/Cultural/Political Institutions of Asia)

D. One elective course selected from Asian American Studies or from the interdepartmental list available from the IDP counselor. Electives may include Independent Studies/Special Studies courses: Asian American Studies 190-199. Students may request, by petition, one lower-division course to count as an elective.

Students must meet on a quarterly basis with their designated faculty advisor who will review their plan of study.

Residence Requirement for the Major: A minimum of five upper-division courses required for the major must be completed successfully at UCI.

Requirements for the Minor

Asian American Studies 60A, 60B, 60C, 100B, and four upper-division courses selected from Asian American Studies 100–169, 190–199.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be completed successfully at UCI. Two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

GRADUATE EMPHASIS IN ASIAN AMERICAN STUDIES

The Program in Asian American Studies offers a graduate emphasis in Asian American Studies, which is available in conjunction with selected departmental graduate programs. Students in the graduate emphasis complete a minimum of four courses, including Asian American Studies 200A and 200B, and two electives, one of which is selected from the student's own department or area of interest, and the other from a discipline outside that department or area.

Subject to the requirements of participating academic units, Ph.D. students in the emphasis will have at least one Asian American Studies core faculty member on their qualifying examination and dissertation committees. With the approval of the Asian American Studies Graduate Committee, affiliated faculty members can sit in place of the core faculty. (There are no requirements concerning qualifying examinations or theses for master's students.)

Applicants to the emphasis must be admitted to a participating UCI graduate program. For complete information about application policies and procedures, as well as the requirements of the emphasis, see the Program counselor or one of the Asian American Studies faculty members.

Courses in Asian American Studies

LOWER-DIVISION

50 Introductory Topics in Asian American Studies (4). Introduction to a broad range of topics in Asian-American studies, exploring history, literature, art, culture, politics, and contemporary social issues. May be repeated for credit as topics vary.

60A Introduction to Asian American Studies I (4). Examines and compares the diverse experiences of major Asian American groups since the mid-nineteenth century. Topics include: origins of emigration; the formation and transformation of community; gender and family life; changing roles of Asian Americans in American society. Same as History 15C and Social Science 78A. **(III, VII-A)**

60B Introduction to Asian American Studies II (4). Examines the renewal of Asian immigration following World War II. Focuses on domestic and international conditions influencing the liberalization of U.S. immigration laws, and the impact of contemporary Asian immigration on the U.S. political economy and social order. Same as Social Science 78B. **(III, VII-A)**

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. Same as Social Science 78C. **(III, VII-A)**

UPPER-DIVISION

100A Research Methodologies for Asian American Studies (4). Explores various research methodologies for Asian American Studies combining theoretical knowledge with field research. Goals: conduct field research about immigrants and refugees from Asia. Topics vary: migration and labor, assimilation and cultural preservation, cultural expressions in the diaspora. Prerequisites: satisfactory completion of the lower-division writing requirement and at least one other course in Asian American Studies.

100B 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. Same as Social Science 178A.

110 Asian American Writers (4). Literary analysis of Asian American writers' representations of issues of identity, class, history among others. Variety of literary forms—novel, poem, drama, essay—included in a study of a variety of Asian American ethnic groups. May be repeated for credit as topics vary. **(VII-A)**

111 Asian American History (4). Introduction to important themes in the history of people of Asian ancestry in the United States from the nineteenth century to the present. May be repeated for credit as topics vary. **(VII-A)**

111A Chinatowns in the U.S. (4). Discusses the various communities that Chinese Americans have established in different places and at different times; their significance for Chinese Americans and their prominent place in American racial consciousness. **(VII-A)**

112 Asian American Art History (4). Investigation of Asian American experience expressed by art and visual culture throughout the twentieth century. Art by Asian Americans of diverse backgrounds as well as the history of cultural visualization of Asian identities in American art/visual culture. May be repeated for credit as topics vary.

114 Asian American Film and Video (4). Topics include histories of Asian American film and video, including documentaries, experimental, short subjects, feature-length independent film, and other forms of cinematic expression. Explores issues of identity (national, racial, gendered, among others). May be repeated for credit as topics vary.

115 Asian American Media and Arts (4). Includes the study of Asian American history and society through the analysis of a variety of media forms such as painting, music, cinema, video, and other artistic representations. May be repeated for credit as topics vary.

131 Asian American Politics (4). Provides various overviews of politics within Asian American communities. May compare with African American and/or Latino politics. May be repeated for credit as topics vary.

141 Asian American Psychology (4). Examines the social and psychological concerns of Asian Americans; e.g., coping with racial prejudice, maintaining bicultural identities, dealing with cross-cultural conflicts in interracial relationships, and trying to reconcile generational differences between immigrant parents and their American-born children. Same as Psychology 174A. **(VII-A)**

142 Muslim Identities in North America (4). Explores multiple identities of Muslims in North America, including indigenous Muslims (e.g., African-American Muslims and Sufis) and immigrants of many national origins. Explores religious, political, cultural, ethnic, class differences among American Muslims, turning to Islamic institutions near UCI to conduct small research projects. Same as Anthropology 125Z. **(VII-A)**

150 Special Topics in Asian American Studies (4). Analyzes a variety of themes in Asian American Studies—identity, history, culture—from various interdisciplinary perspectives in humanities, arts, social sciences. May be repeated for credit as topics vary. Formerly Humanities 160. **(VII-A)**

151 Asian American Ethnic Groups (4). Topics include study of the history, culture, and social formations of diverse Asian American subgroups such as Pacific Islanders, Hmong, Thai, Indonesian, Indian subcontinental, among others. May be repeated for credit as topics vary. **(VII-A)**

151A Filipina/Filipino American History Pre-1965 (4). Introduces students to major themes and issues of pre-1965 Filipina/Filipino American history: nationalism, migration, labor, region, colonization, social organizations, and education. **(VII-A)**

151B Filipina/Filipino American History Post-1965 (4). Explores the history of Filipina/Filipino Americans in the post-1965 era. Examines migration, colonization, labor; investigates community formation focusing on Los Angeles, Hawai'i, and San Diego. Undertakes issues surrounding politics, education, the arts, and identity. **(VII-A)**

151C The Korean American Experience (4). Explores the factors that have distinctly shaped the Korean American experience, including patterns of racial domination, the profile of immigrant flow, immigrant roles in the urban political economy, politics in Korea, and the role of the church. Same as Social Science 178C. **(VII-A)**

151D The Vietnamese American Experience (4). Studies the resettlement of Vietnamese in the United States following their exodus from Southeast Asia. Topics discussed include the Vietnam War, the 1975 evacuation, boat and land refugees, the shaping of Vietnamese communities, and Vietnamese American literature. Same as Social Science 178D. **(VII-A)**

151E The Japanese American Experience (4). Studies the settlement of Japanese in Hawaii and the continental United States since the late nineteenth century. Topics covered include sugar plantations, development of rural Japanese America, World War II internment, post-War community development, and persistence of Japanese American identity. Same as Social Science 178E. **(VII-A)**

151F South Asian American Experience (4). Examines and compares the experiences of South Asian immigrants in the U.S. over time. Looks at the economic, political, and social positions of the immigrants, with special emphasis on religious changes and the changes in the second and later generations. Same as Anthropology 125Y.

151G Asian Americans and Pacific Islanders (4). Discusses the different histories, cultures, religious practices of Asian Americans and Pacific Islanders. Examines the experiences of indigenous peoples and Asian immigrants in the Pacific and their links to the continental United States. **(VII-A)**

161 Ethnic and Racial Communities (4). Examines various theoretical analyses of race and ethnicity, particularly as they apply to Asian Americans. Also explores the relationship of Asian Americans to other racialized minorities in the U.S. Same as Social Science 175B. **(VII-A)**

162 Asian American Women (4). Examines the representations and experiences of Asian American women from diverse perspectives. Explores the commonalities and differences among various groups of Asian American women, with particular focus on history, culture, values, and family roles. Same as Social Science 178B. **(VII-A)**

163 Asian American Women's Film (4). Explores the social significance of film and video made by Asian American women in relation to issues of race, representation, and social change. These film and video makers use these media to raise complex issues of class, politics, and race interacting with gender. May be repeated for credit as topics vary.

164 Special Topics in Ethnicity, Gender, and Race (4). Topics include analysis and comparison of various themes related to ethnicity, gender, and race within the Asian American communities. May be repeated for credit as topics vary. **(VII-A)**

171 Topics in Asian Studies (4). Various surveys of topics focusing on Asia/Asian cultures, arts, histories, social and political institutions. May be repeated for credit as topics vary. **(VII-B)**

171A Comparative International Migration (4). Examines the migration patterns to the four largest nations that receive immigrants (i.e., permanent settlers): Australia, Canada, Israel, and the United States. Special attention to increasing importance of Asian migrants in the economic and cultural fabric of *each* nation. **(VII-B)**

173 Topics in East Asian Studies (4). Analysis of East Asian literary works in translation. Taught in English. May be repeated for credit as topics vary. **(VII-B)**

197 Field Research: Asian Immigrants and Refugees in Orange County (4). Instruction in field work methodology via research projects involving the local communities of immigrants and refugees from Asia. Open only to School of Social Sciences and Asian American Studies majors. Same as Anthropology 161T. **(VII-A)**

199 Independent Study (1 to 4). Directed reading and research in consultation with a faculty member. Substantial written work required. Prerequisite: consent of sponsoring faculty member. May be repeated for credit.

GRADUATE

200A Theory and Methods in Asian American Studies (4). Examines major theoretical and methodological issues in Asian American Studies. Topics include the social construction of race and identity, the intersection with class and gender, and the relationship between quantitative and qualitative approaches in research methodologies. Prerequisite: graduate standing.

200B Contemporary Issues in Asian American Studies (4). Examines major contemporary issues debated within the field of Asian American Studies. Topics include configurations of communities, relations with other communities of color, cultural expressive forms, transnationalism/diaspora, strategies for empowerment, among others. Prerequisite: graduate standing.

201 Graduate Topics in Asian American Studies (4). Seminars on various topics in Asian American Studies. Prerequisite: graduate standing. May be repeated for credit as topics vary.

299 Directed Research (4 to 12). Directed graduate study/research in Asian American Studies. Prerequisite: graduate standing. May be taken for credit for a total of 24 units.

399 University Teaching (4). Limited to teaching assistants. Must be admitted to the graduate emphasis in Asian American Studies. Satisfactory/Unsatisfactory only. May be taken for credit six times.

DEPARTMENT OF CLASSICS

120 Humanities Office Building II; (949) 824-6735
Patrick Sinclair, **Department Chair**

Faculty

Luci Berkowitz, Ph.D. Ohio State University, *Professor Emerita of Classics* (Greek literary history, computer applications to literature)
Theodore F. Brunner, Ph.D. Stanford University, *Professor Emeritus of Classics* (computer application to Classical literature, Augustan literature)
Cynthia L. Claxton, Ph.D. University of Washington, *Lecturer in Classics, Undergraduate Program Director, and Graduate Teaching Supervisor* (Greek prose, historiography)
Walter Donlan, Ph.D. Northwestern University, *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)
Maria C. Pantelia, Ph.D. Ohio State University, *Associate Professor of Classics and Director, Thesaurus Linguae Graecae* (Greek epic poetry, Hellenistic poetry, computer applications to Classics)
B.P. Reardon, D.U. Université de Nantes, *Professor Emeritus of Classics* (Late Greek literature, Greek novel)
Patrick Sinclair, Ph.D. Northwestern University, *Department Chair and Associate Professor of Classics* (rhetoric, 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 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 their programs.

For the Classics major, study of the Classics must be based on competence in both Greek and Latin. The Classics program is designed to provide the student with this competence as rapidly as possible, so that by the end of first-year Greek or Latin the student has already been introduced to some of the major Classical authors in the original language. From then on, courses are devoted to reading and interpreting the literature of ancient Greece and Rome. In addition to their training in the languages, students 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 faculty before enrolling in Classics courses.

The Department adheres to the policy of giving its students an opportunity to participate in the departmental decision-making process. Student representatives, elected from and by the undergraduate majors, participate in all open departmental meetings. Representatives are responsible for maintaining close liaison with their constituency, for representing the students' interest in curriculum and personnel matters, and for the evaluation of both the academic program and the academic staff.

Inquiries regarding language placement, prerequisites, planning a program of study, or other matters related to the Department's offerings should be directed to the Office of the Chair, 120 Humanities Office Building II, telephone (949) 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 54–59.

School Requirements: See pages 203–204.

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, 10, 20, 170 (Greek 120 recommended) or *Latin concentration*—Latin 25, 101, 102, 105A-B-C; Greek 25, 101, 102; Linguistics 3, 10, 20, 170.

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* 45A-B-C; four upper-division Classics courses; three additional courses in Classical history, Classical philosophy, or Classical art.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for Minors

The Department offers minors in Greek, Latin, and Classical Civilization.

Greek: Greek 1A-B-C, 25, 101, 102, 105A-B-C. Greek 120 may be substituted for one course at the 100 level.

Latin: Latin 1A-B-C, 25, 101, 102, 105A-B-C.

Classical Civilization: Classics 35A, 35B, 35C or Classics 45A-B-C; five upper-division Classics courses, one of which may be in a related field such as history, art history, or philosophy.

Residence Requirement for the Minor: Four upper-division courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

PLANNING A PROGRAM OF STUDY

The Department believes in close consultation with students on academic advising and program planning. Students planning to major (or minor) in Classics or Classical Civilization are strongly urged to consult with the departmental faculty at the earliest possible moment to learn about the various programs.

Teaching Credentials: For students interested in teaching careers, the UCI Department of Education offers both single subject and multiple subject teaching credential programs. Students who would like to earn a single subject credential to teach Latin at the secondary level may complete a California Commission on Teacher Credentialing (CCTC)-approved subject-matter program through the Department of Classics course offerings. Interested students should consult the Department of Classics Undergraduate Program Director and a Department of Education advisor for more information.

CAREER OPPORTUNITIES

The study of the ancient world is a valuable possession for modern life. The discipline of Classics is an important part of a well-rounded education. Greek and Latin language and literature, history and philosophy, mythology and religion make an excellent basis for exploring all periods of Western culture down to the present day. Classics is an interdisciplinary study, exploring human culture by a variety of methods from a variety of points of view. For this reason, the student who chooses to major in Classics or Classical Civilization may find many professional opportunities open.

Graduate and professional schools in medicine, law, management, and other fields welcome students with training in Classics. So do many business corporations. Business, industry, and technology are well acquainted with the value of an education in Classics. They are aware that students with a strong background in a respected and challenging major such as Classics are disciplined thinkers who can express themselves in clear, coherent, and cogent language, capabilities that are considered valuable in future physicians, lawyers, and managers.

There are also specific vocational opportunities open to the graduate in Classics or Classical Civilization. A major in this field may lead to a career in high school teaching, or (after appropriate further study) in college or university teaching. It is also an excellent preparation for advanced study in other academic disciplines such as archaeology, history, comparative literature, philosophy, and linguistics, as well as for theological studies and for work in a wide range of the humanities and social sciences.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on résumé preparation, job search, and interview techniques. See the Career Center section for additional information.

The Department of Classics encourages students to take advantage of educational opportunities abroad while making progress toward their UCI degree. Classics and Classical Civilization majors and minors can benefit from a broader perspective of the field by studying for periods ranging from one quarter to one year at any number of universities all over the world through the UC Education Abroad Program. Students can also augment their exposure to Greek, Latin, and Classical civilizations by studying for a summer or during the academic year in Greece or Italy at programs sponsored by other academic institutions through the International Opportunities Program. See the Department of Classics Undergraduate Program Director for additional information.

The University of California Tri-Campus Graduate Program in Classics

UC IRVINE, UC RIVERSIDE, AND UC SAN DIEGO

Thomas F. Scanlon, **Director**

Faculty

Georgios Anagnostopoulos, Ph.D. Brandeis University, *Professor of Philosophy,* UCSD (Ancient Greek philosophy, ethics, metaphysics)

Luci Berkowitz, Ph.D. Ohio State University, *Professor Emerita of Classics,* UCI (Greek literary history, computer application to literature)

Theodore F. Brunner, Ph.D. Stanford University, *Professor Emeritus of Classics,* UCI (computer application to Classical literature, Augustan literature)

Charles Chamberlain, Ph.D. University of California, Berkeley, *Lecturer in Classics and Comparative Literature,* UCSD (Greek and Latin literature, Aristotle, poetics)

Cynthia L. Claxton, Ph.D. University of Washington, *Lecturer in Classics, Undergraduate Program Director, and Graduate Teaching Supervisor,* UCI (Greek prose, historiography)

Walter Donlan, Ph.D. Northwestern University, *Professor of Classics and Graduate Advisor,* UCI (early Greek literature, Greek social history)

Arthur J. Droge, Ph.D. University of Chicago, *Professor of Literature and Director, Program for the Study of Religion, UCSD* (religions of Western antiquity)

Page duBois, Ph.D. University of California, Berkeley, *Professor of Classics and Comparative Literature,* UCSD (Greek literature, rhetoric, critical theory, cultural studies)

Anthony Edwards, Ph.D. Cornell University, *Associate Professor of Classics and Comparative Literature,* UCSD (epic, Greek comedy, critical theory)

Leslie Collins Edwards, Ph.D. Cornell University, *Lecturer in Classics and Comparative Literature,* UCSD (Homer, Greek drama, education in ancient Greece)

William Fitzgerald, Ph.D. Princeton University, *Professor of Classics and Comparative Literature,* UCSD (Latin literature, Classical and modern poetry, critical theory)

Richard I. Frank, Ph.D. University of California, Berkeley, *Associate Professor of History and Classics,* UCI (Roman history, Latin elegy and satire, classical tradition)

David Glidden, Ph.D. Princeton University, *Professor of Philosophy,* UCR (Greek and Roman philosophy)

Anna Gonosová, Ph.D. Harvard University, *Associate Professor of Art History,* UCI (Byzantine and Medieval art)

Edward N. Lee, Ph.D. Princeton University, *Professor Emeritus of Philosophy,* UCSD (Greek philosophy, Plato)

Marianne McDonald, Ph.D. University of California, Irvine, *Professor of Theatre and Classics,* UCSD (Greek and Roman theatre, ancient drama in modern plays, film, and opera)

Margaret M. Miles, Ph.D. Princeton University, *Associate Professor of Art History,* UCI (Greek and Roman art and archaeology, ancient Sicily, Greek religion)

Alden A. Mosshammer, Ph.D. Brown University, *Professor of History,* UCSD (early Christian thought, Greek chronography, early Greek history)

Sheldon Nodelman, Ph.D. Yale University, *Associate Professor of Visual Arts,* UCSD (Classical art and architecture, Roman portraiture, critical theory)

Maria C. Pantelia, Ph.D. Ohio State University, *Associate Professor of Classics and Director, Thesaurus Linguae Graecae,* UCI (Greek epic poetry, Hellenistic poetry, computer applications to Classics)

Wendy Raschke, Ph.D. State University of New York, Buffalo, *Lecturer in Classics,* UCR (Roman satire, Greek art and archaeology)

B. P. Reardon, D.U. Université de Nantes, *Professor Emeritus of Classics,* UCI (Late Greek literature, ancient novel)

Michele Salzman, Ph.D. Bryn Mawr College, *Associate Professor of History,* UCR (Late antiquity; Roman history and literature, religion, women's studies)

Gerasimos Santas, Ph.D. Cornell University, *Professor of Philosophy,* UCI (ancient philosophy, history of philosophy, ethics)
Thomas F. Scanlon, Ph.D. Ohio State University, *Professor of Classics and Director of the UC Tri-Campus Graduate Program in Classics,* UCR (Greek and Roman historiography, ancient athletics)
Gary Shiffman, Ph.D. University of Michigan, *Assistant Professor of Political Science,* UCSD (Greek political theory)
Patrick Sinclair, Ph.D. Northwestern University, *Department Chair and Associate Professor of Classics,* UCI (Roman historiography, rhetoric)
Dana F. Sutton, Ph.D. University of Wisconsin, *Professor of Classics,* UCI (Greek and Latin drama, Greek poetry, Anglo-Latin literature)
Eliot Wirshbo, Ph.D. University of Pennsylvania, *Lecturer in Classics and Comparative Literature,* UCSD (Greek epic, folklore)

The UC Tri-Campus Graduate Program in Classics is a joint venture that combines faculty in Classics and related disciplines from the three southernmost University of California campuses—UC Irvine, UC Riverside, and UC San Diego.

Students accepted into the program may enroll at any of the three campuses, but normally apply for admission through UCI, which is the main location for instruction and administration. Applications are reviewed by an admissions committee composed of faculty members from all three campuses.

The goal of the program is to provide a graduate education that unites the main currents of modern literary, cultural, and social-scientific theory with the traditional skills and methodologies of classical philology. Candidates for degrees are expected to exhibit facility in Greek and Latin, competence in research, including theoretical approaches to texts and objects, technical mastery of computing for research and teaching, and experience in teaching. These goals are realized through the four core courses (Classics 200 A-B-C and 201), seminars (Classics 220), and reading courses (Classics 205).

All entering students are admitted into the Ph.D. program. With the exception of those granted advanced standing because they hold the M.A. degree in Classics from another institution, entering students are 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 Master's paper. The normal course load is three 200-level courses each quarter. Minimum course requirements are Classics 200A-B-C and 201; four quarters of Classics 205; and four quarters of Classics 220. (Classics 280 may be substituted for these courses at the discretion of the faculty.) A reading knowledge of either German, French, Italian, or an equivalent language, demonstrated by examination or other means, is also required. At the end of a student's M.A. studies, a positive vote of the program faculty is necessary for continuation in the Ph.D. program. The expected time for completion of the M.A. degree is two years.

The requirements for the Ph.D. degree are three years (nine quarters) of course work. Minimum course requirements are Classics 200A-B-C and 201; five quarters of Classics 205; and six quarters of Classics 220 or an equivalent course. (Classics 280 may be substituted for these courses at the discretion of the program faculty.) Students are encouraged to take courses and seminars in relevant areas outside the program at any of the three campuses. Students must demonstrate reading proficiency in a second modern language by the end of their third year. At this stage, and during the fourth year of study, students are expected to have read extensively in the primary texts, in literary history and theory, and in ancient history. In addition, experience in supervised teaching and/or research activity is normally required. In order to qualify as a candidate for the Ph.D. and enter the dissertation stage, a student must pass an individually designed set of qualifying examinations, including translation examinations in Greek and Latin, written examinations or lengthy papers in special authors and field, and an oral examination. The expected time for the completion of the Ph.D. degree is six years.

The facilities, course offerings, programs, and individual faculty mentorship of all three campuses are available to students in the UC Tri-Campus Graduate Program in Classics. In addition, program resources are enhanced through a cooperative teaching arrangement among the Tri-Campus Program and the Classics graduate program at UC Los Angeles and at the University of Southern California.

Thesaurus Linguae Graecae

The Thesaurus Linguae Graecae (TLG) is a research center at UCI. TLG has created a digital library of Greek literature, a unique resource for research in Greek literary and linguistic studies. Although administratively separate, TLG is closely affiliated with the Department of Classics. Information is available in the Research and Graduate Studies section of this *Catalogue*.

Undergraduate Courses

Several of the Department of Classics' upper-division undergraduate courses are offered as variable-topics courses, that is, the topics addressed change from quarter to quarter. Contact the Department office for a list of recently offered topics.

Courses in Greek

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.

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 (1 to 4) F, W, S. Consultation with instructor necessary prior to registration. May be repeated for credit as topics vary.

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 (1 to 4) F, W, S. Consultation with instructor necessary prior to registration. May be repeated for credit as topics vary.

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.

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 (1 to 4) F, W, S. Consultation with instructor necessary prior to enrollment. May be repeated for credit as topics vary.

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 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 (1 to 4) F, W, S. Consultation with instructor necessary prior to enrollment. May be repeated for credit as topics vary.

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)

45A-B-C Classical Mythology (4-4-4) F, W, S. An overview of the main myths of the ancient Greeks and Roman and their influence in literature and art throughout time. Includes readings from ancient and modern sources and utilizes modern technology.

45A The Gods (IV)

45B The Heroes (IV)

45C Ancient and Modern Perspectives of Classical Mythology. Topics vary. **(IV)**

Classics 75 Introduction to Classical Rhetoric (4). Introduction to the principles of rhetoric among the ancient Greeks and Romans and to the critical analysis of arguments. Students are introduced to the history, law, and politics that provided the context in which ancient rhetoric operated.

Classics 99 Special Studies in Classics (1 to 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 170 Topics in Classical Civilization (4). Subject matter variable. May be repeated for credit provided topic varies.

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 (1 to 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.

TRI-CAMPUS GRADUATE COURSES

The topics offered in these courses vary from quarter to quarter. Contact the Department of Classics office for a list of recently offered topics.

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

443 Humanities Instructional Building; (949) 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, *Director of the Emphasis in Critical Theory and Associate Professor of Korean Culture* (modern Korea, post-colonial and colonial discourse, popular culture, anthropology)

Edward Fowler, Ph.D. University of California, Berkeley, *Professor of Japanese* (modern Japanese literature, cultural studies, film)

James Fujii, Ph.D. University of Chicago, *Associate Professor of Japanese* (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, *Associate Professor of Chinese* (narrative theories and traditional Chinese fiction)

Kyung Hyun Kim, Ph.D. University of Southern California, *Assistant Professor of Korean Culture* (East Asian China, modern Korea, cultural theory)

Susan B. Klein, Ph.D. Cornell University, *Director of Religious Studies and Associate Professor of Japanese* (premodern and modern theater and dance, Japanese religions, feminist critical theory)

Meng Yue, M.A. University of California, Los Angeles, *Acting Assistant Professor of Chinese* (Chinese poetry and literatures in pre-modern Chinese)

Affiliated Faculty

Kenneth L. Pomeranz, Ph.D. Yale University, *Department Chair of History and Professor of History, East Asian Languages and Literatures, and Social Ecology* (modern Chinese)

Anne Walthall, Ph.D. University of Chicago, *Professor of History and of East Asian Languages and Literatures* (early modern and modern Japan)

R. Bin Wong, Ph.D. Harvard University, *Director of the Minor in Asian Studies and Professor of History and of East Asian Languages and Literatures* (modern Chinese, comparative economic history)

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 UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Undergraduate Program

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 54–59.

School Requirements: See pages 203–204.

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 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 Requirement for the Minors: A minimum of four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Graduate Program

The Department offers a 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, Korean 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 (1 to 4). Investigation of special topics through directed reading in Chinese. Paper required. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units.

GRADUATE

201 Readings in Traditional Chinese Narrative and Prose (4). Close reading of selected premodern prose texts such as historical narratives, novels, short stories, and essays. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

202 Readings in Traditional Chinese Poetry (4). Close readings of selected premodern poetic texts. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

203 Readings in Modern Chinese Literature (4). Close readings of selected modern literary texts. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

204 Readings in Chinese Literary and Cultural Theory (4). Close readings of selected texts in premodern criticism and theory. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

211A-B Studies in Traditional Chinese Narrative and Prose (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

212A-B Studies in Traditional Chinese Poetry (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

213A-B Studies in Modern Chinese Literature (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

214 Studies in Chinese Literature and Cultural Theory (4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C and/or Chinese 101C, as specified. May be repeated for credit as topics vary.

230 *Topics in Chinese Literature and Culture* (4). *Seminar, with topics* varying from year to year. Research paper required. Prerequisite: Chinese 101 or equivalent. May be repeated for credit as topics vary.

290 Independent Study (4). Directed research on topic determined in consultation with faculty member. A term paper or project is required. May be repeated for credit.

299 Dissertation Research (4 to 12). For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

Courses in Japanese

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 Japanese1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: Japanese S1AB or 1B, or two years of high school Japanese. Japanese S1AB-BC and Japanese 1A-B-C may not both be taken for credit.

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 (1 to 4). Investigation of special topics through directed reading in Japanese. Paper required. May be repeated for credit provided topic varies. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units.

GRADUATE

201 Readings in Traditional Japanese Prose (4). Close reading of selected premodern prose texts, including tales, journals, travel journals, essays. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

202 Readings in Traditional Japanese Poetry or Drama (4). Close reading of selected premodern poetic or dramatic texts. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

203 Readings in Modern Japanese Literature (4). Texts include both fiction and nonfiction by important writers, and may be supplemented where needed by literary criticism and cultural-studies texts in English. Prerequisite: Japanese 101C or equivalent, or consent of instructor. May be repeated for credit as topics vary.

204 Readings in Traditional Japanese Literary and Cultural Theory (4). Close reading of selected texts involving literary criticism and/or aesthetics. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

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 Korean

UNDERGRADUATE

1A-B-C Fundamentals of Korean (5-5-5) F, W, S. Natural approach with emphasis on the four fundamental skills of listening, speaking, reading, and writing. Conducted in Korean. Korean 1A-B-C and Korean S1AB-BC may not both be taken for credit.

S1AB-BC Fundamentals of Korean (7.5-7.5) Summer. First-year Korean in an intensified form. Same as Korean 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: S1AB or Korean 1B, or two years of high school Korean. Korean S1AB-BC and Korean 1A-B-C may not both be taken for credit.

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: Korean 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: Korean 2C or equivalent; consent of instructor. **(VII-B)**

101A-B-C Fourth-Year Korean (4-4-4). Continued emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation through intensive study and analysis of a variety of modern texts. Prerequisite: Korean 3C. **(VII-B)**

115 Korean Literature: Advanced Texts (4). Designed for students with near-fluency in reading Korean. Readings include modern Korean literary works (poetry, prose, and drama) by important writers. Emphasis on the interpretation of the texts and writings that interpret those texts in the original language. Prerequisite: Korean 101C or consent of instructor. May be taken for credit three times as topics vary. **(VII-B)**

180 Topics in Korean Literature (4). Special topics through directed readings in Korean. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies. **(VII-B)**

199 Independent Study (1 to 4). Investigation of special topics through directed reading in Korean. Paper required. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units.

Courses in Vietnamese

1A-B-C Fundamental Vietnamese (5-5-5) F, W, S. Natural approach with emphasis on four fundamental skills of listening, speaking, reading, and writing. Conducted in Vietnamese. Prerequisites: for 1A: none; for 1B: 1A; for 1C: 1B. Vietnamese 1A-B-C and Vietnamese S1AB-BC may not both be taken for credit.

S1AB-BC Fundamental Vietnamese (7.5-7.5) Summer. First-year Vietnamese in intensified form. Intended for students with little or no knowledge of the Vietnamese language. Emphasis is on mastery of the basic language skills of understanding, speaking, reading, and writing. Prerequisite for S1AB: none; for S1BC: S1AB, or two years of high school Vietnamese, or one semester of college-level Vietnamese. Vietnamese S1AB-BC and Vietnamese 1A-B-C may not both be taken for credit.

Courses in East Asian Languages and Literatures

UNDERGRADUATE

20 Asian Religions (4). An introduction to Asian religions (Hinduism, Buddhism, Confucianism, Taoism, Shamanism) including both elite doctrinal aspects and forms of more popular religiosity. May be taken for credit three times as topics vary. **(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 Languages and Literatures 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. **(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 East Asian Philosophy (4). Selected topics in the philosophies of East Asia, e.g., Yoga, Buddhism, Vedanta, Confucianism, Taoism, and Shinto. Same as Philosophy 117. May be repeated for credit as topics vary. **(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. **(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)**

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. 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 (1 to 4). Investigation of special topics through directed reading in translation. Paper required. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units as topics vary.

GRADUATE

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

435 Humanities Instructional Building; (949) 824-6712
Margot Norris, **Department Chair**

Faculty

Elizabeth Allen, Ph.D. University of Michigan, *Assistant Professor of English* (medieval literature, narrative and poetic form, literary history, theories of reception and hermeneutics)

Stephen A. Barney, Ph.D. Harvard University, *Professor Emeritus of English* (medieval literature and culture, allegory)

Lindon W. Barrett, Ph.D. University of Pennsylvania, *Associate 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, *Professor of English* (Colonial American literature, critical theory)

Jacques Derrida, Doctorat d'Etat es Lettres, Sorbonne, *Professor of French, Philosophy, and Comparative Literature* (philosophy, critical theory)

Robert Folkenflik, Ph.D. Cornell University, *Professor of English* (eighteenth-century, novel, biography, and autobiography)

Laura García-Moreno, Ph.D. Cornell University, *Assistant Professor of Comparative Literature* (twentieth-century Latin American literature, literary theory, gender and cultural studies)

Alexander Gelley, Ph.D. Yale University, *Professor of Comparative Literature* (eighteenth- and nineteenth-century European novel, critical theory, comparative literature)

Linda Georgianna, Ph.D. Columbia University, *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)

Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Assistant Professor of Women's Studies and Comparative Literature* (Asian-American literature and culture, feminist theory, ethnic studies, gender)

Ketu H. Katrak, Ph.D. Bryn Mawr College, *Director and Professor of Asian American Studies and Professor of English and Comparative Literature* (Asian American literature, post-colonial literature)

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)

Michelle Latiolais, M.F.A. University of California, Irvine, *Associate Professor of English and Creative Writing* (creative writing, fiction)

Karen R. Lawrence, Ph.D. Columbia University, *Dean of the School of Humanities and Professor of English* (twentieth-century literature, travel writing, women's writing, the novel)

Julia Reinhard Lupton, Ph.D. Yale University, *Associate Professor of Comparative Literature* (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, *Professor of English* (rhetoric, critical theory, American literature, law and literature)

James McMichael, Ph.D. Stanford University, *Director of Poetry, Programs in Writing, and Professor of English* (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, *Professor of Comparative Literature* (sixteenth- and seventeenth-century German literature, contemporary theory and criticism, feminism)

Robert Newsom, Ph.D. Columbia University, *Associate Dean of the Division of Undergraduate Education and Professor of English* (Victorian literature, theory of fictions)

Margot Norris, Ph.D. State University of New York, Buffalo, *Department Chair and Professor of English and Comparative Literature* (modern British literature)

Laura O'Connor, Ph.D. Columbia University, *Assistant Professor of English* (British and American modernism, Irish literary studies, postcolonial theory)

Robert L. Peters, Ph.D. University of Wisconsin, *Professor Emeritus of English* (Victorian literature, contemporary poetry)

Barbara L. Reed, Ph.D. Indiana University, *Senior Lecturer in English* (American literature, children's literature)

Hugh Roberts, Ph.D. McGill University, *Assistant Professor of English and Comparative Literature* (Romantic literature, eighteenth-century literature, Victorian poetry, literary theory, New Zealand literature)

Christine F. Ross, Ph.D. University of Pittsburgh, *Assistant Professor of English* (rhetoric, composition, eighteenth-century studies)

John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Director (Interim) of African-American Studies 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, *Director of the Critical Theory Institute and 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* (American and Canadian literature, early twentieth-century English poetry, ethnic literature, rhetoric)

James Steintrager, Ph.D. Columbia University, *Assistant Professor of Comparative Literature* (eighteenth-century French, German, and English literature and aesthetics)

Brook Thomas, Ph.D. University of California, Santa Barbara, *Professor of English* (American literature, literature and law)

Harold Toliver, Ph.D. University of Washington, *Professor Emeritus of English* (Renaissance and seventeenth-century literature, theory of genre)

Ann J. Van Sant, Ph.D. University of California, Berkeley, *Associate Professor of English* (seventeenth- and eighteenth-century literature, eighteenth-century literature, eighteenth-century novel, women and fiction, satire)

Andrzej Warminski, Ph.D. Yale University, *Director of the Comparative Literature Program and Professor of Comparative Literature* (Romanticism, critical theory)

Robyn Wiegman, Ph.D. University of Washington, *Director of the Program in Women's Studies and Associate Professor of Women's Studies, African-American Studies, and English* (American literature, women's studies, queer 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 elected representatives to departmental committees. Each quarter both undergraduate and graduate students taking classes within the Department have the opportunity to evaluate their courses and teachers.

CAREERS FOR THE ENGLISH OR 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 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.

For those students interested in going on for a credential in secondary school teaching, UCI has a CCTC-approved single-subject-matter preparation program in English.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Undergraduate Program

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 nonfiction are also available. 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 54–59.

School Requirements: See pages 203–204.

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; 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, Korean, or Russian, may ordinarily require three years of language study as preparation for the study of literature; students who wish to use such languages should consult with the Department about satisfaction of this requirement before doing so.)

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 completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

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 completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

PLANNING A PROGRAM OF STUDY

Students should 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.

UCI has a California Commission on Teacher Credentialing (CCTC)-approved single subject preparation program in English: interested students should contact the Department of English and Comparative Literature for further information. Students who intend to pursue a single-subject or multiple-subject teaching credential should consult the UCI Department of Education as early as possible 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. candidates, in English as well as in Comparative Literature, may gain supervised training as part of the formal seminar work required for the degree. M.F.A. candidates also have the opportunity to participate in this program. Candidates for the Ph.D. are expected to acquire experience in teaching.

All those interested in graduate study in the Department should obtain the brochure on graduate programs from the departmental office.

The Murray Krieger Endowed Fellowship in Literary Theory was 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.

In addition to the emphases in Feminist Studies and Critical Theory available in the School of Humanities, graduate students in Comparative Literature may choose to complete an emphasis in French.

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) F. 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 play-writing, 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. 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 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, or Humanities 110 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. **(VII-A)**

CL 105 Multicultural Topics in Comparative Literature (4) F, W, S. Treats the literature and culture of one or more minority groups in California and the United States, including African-Americans, Asian-Americans, Chicano/Latinos, and Native Americans, in relation to other national literatures. May be repeated for credit as topics vary. **(VII-A)**

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 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 184 History of English (4). External (historical and social) and internal (linguistic) changes which have affected the English language from its Germanic roots to the present day. Prerequisite: Linguistics 3. Same as Linguistics 172.

E 187 Selected Topics in English Linguistics (4)

E 198 Special Topics (4-4-4). Directed group study of selected topics. By consent, by arrangement.

CL 198 Special Topics (4-4-4). Directed group study of selected topics. By consent, by arrangement.

E 199 Reading and Conference (1 to 4). To be taken only when the materials to be studied lie outside the normal run of departmental offerings, and when the student will have no formal chance to pursue the subject. Prerequisites: consent of the student's advisor, the instructor, and the Department Chair.

CL 199 Reading and Conference (1 to 4). To be taken only when the materials to be studied lie outside the normal run of departmental offerings, and when the student will have no formal chance to pursue the subject. Prerequisites: consent of the student's advisor, the instructor, and the Department Chair.

GRADUATE

All graduate courses may be repeated when the topic varies. Descriptions of the topics to be treated in a given academic year are published by the Department in the fall. Enrollment in each graduate course requires the consent of the instructor. The courses are limited to registered graduate students, except for specially qualified fifth-year students seeking teaching credentials, who may enroll if they have first received permission from the Department's Graduate Committee and if space permits.

In addition to the following courses, graduate students in the Department of English and Comparative Literature might find Humanities 200 (The Nature and Theory of History) and Humanities 291 (Interdisciplinary Topics) of special interest.

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

E 215 Prospectus Workshop (2) F. Workshop for the writing of the graduate student prospectus for those who have completed their qualifying examinations. Topics covered and assignments completed culminate in a presentation of a draft of the prospectus in class. Biweekly discussions.

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 (4) F, W. Readings, lectures, and internship designed to prepare graduate students to teach composition. Formal instruction in rhetoric and practical work in teaching methods and grading. Consent of instructor required.

E 399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants. Satisfactory/Unsatisfactory only.

PROGRAM IN FILM STUDIES

235 Humanities Instructional Building; (949) 824-5386
Rhona Berenstein, **Program Director**

Faculty

Rhona Berenstein, Ph.D. University of California, Los Angeles, *Director of the Program in Film Studies and Associate Professor of Film Studies* (television studies, film genres, gender and popular culture, queer film and television)

Homer Obed Brown, Ph.D. The Johns Hopkins University, *Professor of English* (film theory, American film, popular culture)

Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish* (Latin American and Chicano studies)

David Carroll, Ph.D. The Johns Hopkins University, *Chair of the Department of French and Italian and 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, *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, and new technologies)

James Herbert, Ph.D. Yale University, *Professor of Art History* (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)

David Joselit, Ph.D. Harvard University, *Associate Professor of Art History* (modern and contemporary art, critical theory, gender studies)

Kyung Hyun Kim, Ph.D. University of Southern California, *Assistant Professor of Korean Culture* (history of film, Asian films)

Marcia Klotz, Ph.D. Stanford University, *Assistant Professor of German and Film Studies* (feminism, critical theory, German film, cultural studies, race)

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)

Mark S. Poster, Ph.D. New York University, *Professor of History, Film Studies, and Information and Computer Science* (theory and history of the media, theory of technology and culture, and Internet studies)

Fatimah Tobing Rony, Ph.D. Yale University, *Assistant Professor of Film Studies* (documentary film, race and representation, film history and criticism, film production)

John Carlos Rowe, Ph.D. State University of New York at Buffalo, *Director (Interim) of African-American Studies 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)

Undergraduate Program

We live in a world in which we are surrounded by images. Whether printed on roadside billboards or broadcast into our homes via television, the media greatly influence our sense of who we are and how we live. Yet so much of our exposure to the sights and sounds of film, TV, video, advertising, and new technologies is taken for granted. Those sights and sounds are so pervasive, and in many cases so enjoyable, that we rarely pause to consider how they act upon us and how we interact with them. An undergraduate education in Film Studies provides students with an opportunity to explore the appeal and to begin to understand the operation of these complex meaning-producing machines we call cinema, television, and new technologies.

The course work leading to the B.A. degree in Film Studies trains students to read and understand the audio-visual languages of modern media and new technologies and to analyze images from socioeconomic, political, aesthetic, and historical perspectives. Learning these critical viewing skills involves learning new ways of seeing. The Film Studies curriculum is systematic and comprehensive; upper-division courses have between 20 and 50 students and are typically taught by regular faculty. During the 1999–2000 academic year, there were more than 120 Film Studies majors enrolled at UCI.

The program in Film Studies familiarizes students with the history, theory, and art of cinema and other media. Courses focus on a range of topics, including individual directors, period styles, genres, national cinemas, the history and criticism of television, and developments in new technologies. Additional courses offer students hands-on experience in video production and screenwriting. The program provides its majors with a thorough appreciation of the modern media's roles in contemporary society. Regular course offerings are complemented by film and video screenings and series at the School of Humanities Film and Video Center. Film Studies, in cooperation with other units at UCI, regularly invites scholars, directors, producers, and screenwriters to campus to share their work and perspectives with students.

Film Studies at UCI is unique in its concentration on the history, theory, and criticism of cinema, television, and new technologies. The faculty has published books and articles on topics that include images of the Vietnam war, avant-garde directors, ethnographic film, film and postmodernism, horror cinema, women filmmakers, television performance, and new technologies.

In order to cover the extra costs generated by the purchase and rental of media and production equipment demanded by the specialized Film Studies curriculum, the School of Humanities charges a laboratory fee of $20 per course to all students taking Film Studies courses.

Film Studies students can complete professional internships in the fields of film or television production, distribution, writing, and related areas for elective course credit.

Film Studies students also 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 in 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 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, UCLA, 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 UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See pages 203–204.

Program Requirements for the Major

Film Studies 85A-B-C, 101A-B-C, 110, either 117A or 120A, 139, and four of the following: 112, 113, 114, 115, 130, 160, 185, 190, 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 85A, 101A-B-C, and three of the following: 85B, 85C, 110, 112, 113, 114, 115, 130, 160, 185, 190.

Residence Requirement for the Minor: Four upper-division courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Graduate Study

In conjunction with the Department of Art History, the Program in Film Studies offers a graduate program in Visual Studies. A program description may be found at the end of the School of Humanities section. Graduate courses satisfying the requirements of the program are listed there, as well as below, and in the Art History section.

Courses in Film Studies

LOWER-DIVISION

85A-B-C Image Culture

85A Visual Media and Contemporary Culture (4) F. An introduction to the study of visual media—such as advertising, movies, television, and video—and analysis of their role in contemporary culture. Introduces students to the critical vocabulary of film and television studies. Formerly Film Studies 85. **(IV)**

85B History of Broadcasting (4) W. A history of broadcast media. Social, political, economic, legal, institutional, and cultural perspectives guide analysis. United States commercial TV serves as the primary case study. Prerequisite: Film Studies 85A or consent of instructor. **(IV)**

85C New Technologies and Visuality (4) S. The study of electronic communication technologies, such as virtual reality and the internet, from social, cultural, psychological, and political perspectives. Prerequisites: Film Studies 85A-B or consent of instructor. **(IV)**

UPPER-DIVISION

101A-B-C History of Film

101A The Silent Era I (4) W. An investigation of the technological, economic, social, and aesthetic determinants of the cinema in its first 30 years. The formal strategies and historical importance of films by Méliès, the Lumières, Porter, Griffith, Murnau, Lang, Eisenstein, Pudovkin, and others. Prerequisite: Film Studies 85A. Concurrent with Film Studies 201A.

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. Concurrent with Film Studies 201B.

101C The Sound Era II (4) F. Studies narrative strategies and formal possibilities in films made since 1960, framing aesthetic questions in political, social, and economic terms, using selected features from Western and non-Western countries. Prerequisite: Film Studies 101B. Concurrent with Film Studies 201C.

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. Critical approaches to the serial productions we call "genre" films, the patterns of recognition known as westerns, weepies, musicals, horror films, and others. May be repeated for credit as topics vary.

113 Film/Narrative/Image (4) F, W, 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? 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. 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. 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. Prerequisite: Film Studies 85A or consent of instructor.

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.

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.

130 Multicultural Topics in the Media (4) F, W, S. An investigation of media representations of gender, race, and sexuality in the United States. Topics include media images of and by one or more minority groups in the United States, including African-Americans, Asian Americans, Chicano/Latinos, Native Americans, and gays and lesbians. Prerequisite: Film Studies 85A or consent of instructor. May be repeated for credit as topics vary.

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 85A 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, or Spanish 160 when topics are appropriate. May be repeated for credit when topics vary. **(VII-B)**

185 Television and New Media (4) F, W, S. An advanced seminar focusing on special issues pertaining to broadcasting and/or new technologies. Topics include, but are not limited to: television criticism; space and new technologies; and broadcast advertising. Prerequisite: Film Studies 85A-B-C or consent of instructor.

190 Special Topics in Film and Modern Media (4) F, W, S. Special issues concerned with film and media history, theory, and criticism. Examples include Gone Primitive (Anglo-American romance with the "primitive" in literature, film, other media); television criticism (review and analysis of models and modes of criticism applied to television since the 1940s). May be

repeated for credit as topics vary. Concurrent with Film Studies 290. Formerly Film Studies 198.

197 Professional Internship (2 to 4) F, W, S. Professional internship in the broadcast, film, video, or Internet industries designed to provide students with closely supervised professional experience to enhance their understanding of media from industrial, historical, and critical perspectives. Journal and final report required. Prerequisite: Film Studies 117A-B-C or 120A-B-C or consent of instructor. Open only to Film Studies majors and minors with a B average or better in Film Studies course work. May be taken for credit for a total of four units.

198 Creative Project (2 to 4) F, W, S. Creative project in screenwriting, filmmaking, videomaking, or Web or Internet design intended to provide advanced production and creative writing training beyond the Film Studies 117A-B-C or 120A-B-C series. Final project required. Prerequisites: Film Studies 85A and 117A-B-C or 120A-B-C or consent of instructor; satisfactory completion of Film Studies 101A recommended. May be taken for credit for a total of eight units.

199 Directed Research (4) F, W, S. Directed reading and research under supervision of a faculty member in topic areas not covered by regular course offerings. Final research paper required. Prerequisites: upper-division standing and consent of instructor.

GRADUATE

Topics within a given area may vary from quarter to quarter, and courses may be repeated for credit when this occurs. In addition to the courses below, graduate courses satisfying the requirements of the program in Visual Studies are listed in the Visual Studies and Art History sections of the *Catalogue*.

201A-B-C History of Film

201A The Silent Era I (4) W. An investigation of the technological, economic, social, and aesthetic determinants of the cinema in its first 30 years. The formal strategies and historical importance of films by Méliès, the Lumières, Porter, Griffith, Murnau, Lang, Eisenstein, Pudovkin, and others. Concurrent with Film Studies 101A.

201B 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. Concurrent with Film Studies 101B.

201C The Sound Era II (4) F. Studies narrative strategies and formal possibilities in films made since 1960, framing aesthetic questions in political, social, and economic terms, using selected features from Western and non-Western countries. Concurrent with Film Studies 101C.

210 Comparative Studies (4) F, W, S. May be repeated for credit as topics vary.

212 Genre Study (4) F, W, S. Close study of film and television genres (musical, western, pornography, horror, gangster, science fiction, police drama, situation comedy, news magazine). May analyze the concept of genre itself, addressing generic modes (film noir) and cross-generic explorations in cinema, TV, video, other media. May be repeated for credit as topics vary.

213 Media/Narrative/Image (4) F, W, S. Situates changes in electronic technologies that impact experiences of the body, identity, urban and architectural space, and information, within a cultural history of vision and visuality. Examines social, cultural, psychological, and political impact of new technologies. May be repeated for credit as topics vary.

214 Media and the Other Arts (4) F, W, S. Comparison and contrast between film, television, literature, video art, photography, new technologies. The integral rapport between visual mass media, high art, music; performance in various media; issues of adaptation from one medium to another (e.g., literature to film, film to CD-ROM). May be repeated for credit as topics vary.

290 Special Topics in Film and Modern Media (4) F, W, S. Special issues concerned with film and media history, theory, and criticism. Examples include Gone Primitive (Anglo-American romance with the "primitive" in literature, film, other media); television criticism (review and analysis of models and modes of criticism applied to television since the 1940s). May be repeated for credit as topics vary. Concurrent with Film Studies 190. Formerly Film Studies 218.

399 University Teaching (4) F, W, S. Required of and limited to teaching assistants. Satisfactory/Unsatisfactory only. May be repeated for credit.

DEPARTMENT OF FRENCH AND ITALIAN

312 Humanities Hall; (949) 824-6407
David Carroll, **Department Chair**

Faculty

Philippe A. Barbé, Ph.D. Northwestern University; Doctorate, University of Paris, *Assistant Professor of French* (Francophone studies, twentieth-century French literature)

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, *Department Chair and Professor of French* (literary theory and twentieth-century French literature)

James Chiampi, Ph.D. Yale University, *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 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, *Associate Professor of French* (twentieth-century poetry; World War II and literature of the avant-garde)

Leslie W. Rabine, Ph.D. Stanford University, *Associate Dean of Humanities Graduate Study and Professor of French* (nineteenth-century French literature and women's studies)

Richard L. Regosin, Ph.D. The Johns Hopkins University, *Professor of French* (sixteenth-century French literature)

Undergraduate Program in French

The Undergraduate Program in French offers a broad humanistic course of study designed for students in the liberal arts. The orientation of the program is multidisciplinary, where the study of literature is linked to critical, cultural, and historical concerns. Courses reflect the faculty's interest in the related disciplines of history, philosophy, anthropology, women's studies, cultural studies, and comparative literature, and express its conviction that the study of French literature and culture is enriched by pursuing its relations with other disciplines, fields, and cultures.

Lower-division language courses encourage students to participate in the creative process of language, to think in French as they learn to understand, speak, read, and write. These courses are taught entirely in French, and the approach to teaching stresses the interdependence of the four basic language skills and makes them mutually reinforcing. The Language Laboratory is used to complement classroom activity.

At the intermediate lower-division level, texts of contemporary literary and social interest provide the focus for advanced conversation, reading, and composition. After the second year, advanced courses in conversation and writing enable students to attain a greater degree of proficiency, preparing them for further study in the multidisciplinary upper-division program.

All upper-division offerings are taught in the seminar mode. Because classes are limited in size, they promote and encourage participation and discussion and facilitate direct contact with professors. In the introductory courses in literature, 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 vocabularies. At the more advanced level, the multidisciplinary courses bring together material and methodologies from the various disciplines in order to address interpretive problems of French literature, culture, and history. In recent years, courses have been offered in literature and political opposition, monsters and madness in Renaissance literature, ethnography and literature, women and sexuality, autobiography, and the supernatural in nineteenth-century narrative. The content of these courses changes yearly according to the interests of both faculty and students.

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, or 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.

Student representatives serve on departmental committees. These representatives also participate in Department meetings and are responsible for student evaluation procedures.

CAREERS FOR THE FRENCH MAJOR

The great majority of students who major in French pursue careers in business and commerce, where they can take advantage not only of their proficiency in French language but also of their knowledge of French literature and culture. Many students also go on to law school, to medical school, and to careers in the diplomatic service. In recent years, graduates have entered the field of education in increasing numbers. The Department's multidisciplinary approach to the study of literature teaches students to think critically and develops analytical skills that can be applied to a wide range of problems. It also helps students to develop the interpretive and writing skills necessary to express their own ideas clearly and persuasively. Whether they enter business or professions such as law, education, or government, French majors acquire the intellectual and communicative skills requisite for success.

The UCI Career Center provides service to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See pages 203–204.

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 completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

PLANNING A PROGRAM OF STUDY

The 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 completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Graduate Program in French

The Department of French and Italian offers a graduate program in French with a strong theoretical, cultural, and multidisciplinary orientation. In addition to their specialties in the traditionally constituted fields of French literature, the faculty is actively involved in related disciplines such as philosophy, psychoanalysis, anthropology, history, women's studies, cultural studies, and comparative literature. A theoretical and multidisciplinary approach to literature is a demanding one requiring, among other things, a restless critique of its own evaluations and concepts.

In small seminars designed to stimulate intellectual exchange, students and faculty explore literature written in French within the context of relevant historical, cultural, or theoretical issues. They raise questions engaged by literary discourse and study critically the theories formulated to account for it. Courses tend to cross lines between disciplines and to emphasize both the close reading of texts and modern theories of history, culture, literature, and criticism. Students are encouraged to pursue their work in related fields outside the Department. They are also strongly encouraged to study abroad at some point during their graduate career.

MASTER OF ARTS IN FRENCH

The Master of Arts degree is considered to be a step toward the Ph.D. degree; only students intending to pursue studies for the doctorate are admitted to the program. Performance on the Master's examination, usually given in the second year of graduate study, determines entrance into the doctoral program. Most candidates take a minimum of 11 graduate courses. All entering graduate students are counseled by the graduate advisor. During the winter quarter of each year, the teaching performance and academic record of each student who is a Teaching Assistant are evaluated. All graduate students are also given a written evaluation of their work on a course-by-course basis. Proficiency in a foreign language in addition to French is required for the M.A. degree (proficiency is defined as the equivalent of the level attained at the end of course 2C).

All M.A. candidates are required to pass the Master's examination. Plan I allows particularly well-prepared students to receive special permission to take nine courses and to write a short thesis, for which two course credits are given. Under Plan II candidates take a minimum of 11 courses and have the option of taking a written examination or of writing a research paper. The written examination consists of essays that demonstrate skills of literary analysis and an understanding of theoretical concepts and their application to the study of specific literary texts. The research paper involves a carefully developed and well-documented analysis that reflects extensive critical reading. In all cases students also take an oral examination that focuses on the written essays or the research paper and that seeks as well to test the student's broader knowledge.

The Master's examination is normally given at the end of the winter quarter of the second year of studies. Students who are Teaching Assistants normally take the examination in the fifth quarter of their studies.

Students transferring to the program from other graduate institutions may receive credit for up to two courses, subject to the approval of the Department. A maximum of five courses may be transferable from other UC graduate programs, with departmental approval.

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 15 graduate courses or seminars in French beyond the B.A. and three graduate courses outside the Department in areas related to the field of specialization are required.

A student may pursue the Ph.D. with particular emphasis in literary theory by taking additional course work in the Department and in the Critical Theory Program beyond the minimum number required.

A student may pursue the Ph.D. with an emphasis in Comparative Literature by taking a minimum of five courses in the Comparative Literature program.

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. In consultation with the Guidance Committee, the student defines the precise nature and scope of four 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.

50 French Culture and the Modern World (4) F, W, S. Introductory course for non-majors. Focuses on France's role in the modern world and its cultural connections to Asia, the Middle East, Africa, Europe, and the Americas. Taught in English. May be taken for credit three times as topics vary. **(IV, VII-B)**

UPPER-DIVISION

100 Composition and Grammar Review

100A Advanced Grammar and Composition (4) F, W. Systematic review of grammar with written compositions on various topics. Students study and practice forms of descriptive and imitative writing, techniques of translation, and textual analysis including *explication de texte* of prose and poetry passages. Prerequisite: French 2C or equivalent.

100B Essay Writing (4) W, S. Trains students to write about literature in French, and introduces them to specific critical approaches and strategies for utilizing library resources, organizing arguments, and developing a coherent essay. Topics for weekly compositions drawn from texts of literary, historical, and social interest. Prerequisite: French 100A or equivalent.

101A-B-C Introduction to French Literature (4-4-4) F, W, S. Introduction to all of the genres of a narrowly defined period in relationship to a specific literary problem. In French. French 100A and 100B are recommended as prerequisites but may be taken concurrently with French 101A-B-C. **(VII-B)**

105 Advanced Composition and Style (4). Helps the student attain greater proficiency and elegance in the written language. Prerequisites: French 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). (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 2000-2001.*

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. **(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. May be repeated for credit as topics vary. **(VII-B)**

140 Studies in French Literary Genre (4)

150 Topics in French Literature and Culture (4). In English. **(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 (1 to 4) F, W, S. Open only to outstanding students. Research paper required. Prerequisites: consent of instructor and of Department Chair; student must submit a written description of the proposed course to the instructor and the Chair prior to the beginning of classes. May be repeated for credit as topics vary.

GRADUATE

The content of these courses changes yearly. 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 (History and Theory); Humanities 220 (Literary Theory and Its History); and Humanities 270 (Advanced 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 216 through 399, except 280 may be repeated for credit when topics vary.

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)

231 Studies in Fiction (4)

232 Studies in Nonfictional Prose (4)

233 Studies in Poetry and Poetics (4)

240 Studies on a Major Writer (4)

250 Studies in Theory and Criticism (4)

254 History and Literature (4)

272 Cultural Studies (4)

280 Directed Study in French Literature (4) F, W. Restricted to graduate students taking the Master's examination the same quarter.

290 Research in French Language and Literature (4-4-4) F, W, S. A project proposal must be prepared by the student and approved by the faculty member who will direct the project. This proposal, with the faculty member's signature, must be given to the Chair for approval and will be put in the student's file. This procedure can be completed before or after registration or at the very latest must be completed by the end of the first week of classes. After the end of the first week no 290s can be approved. M.A. candidates may take this course once; Ph.D. candidates may take it twice.

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)**

140A-B-C Readings in Medieval and Renaissance Literature (4-4-4). In English.

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

400 Murray Krieger Hall; (949) 824-6406
E-mail: german@uci.edu
Jens Rieckmann, **Department Chair**

Faculty

Gail Hart, Ph.D. University of Virginia, *Professor of German* (eighteenth- and nineteenth-century German literature, drama, fictional prose)

Marcia Klotz, Ph.D. Stanford University, *Assistant Professor of German and Film Studies* (twentieth-century German literature, cultural studies, critical theory, feminism, film)

Ruth Kluger, Ph.D. University of California, Berkeley, *Professor Emerita of German* (Kleist, nineteenth-century literature, Stifter, Holocaust literature)

Meredith Lee, Ph.D. Yale University, *Dean of the Division of Undergraduate Education and Professor of German* (lyric poetry, eighteenth-century literature, Goethe, music, literature)

Herbert Lehnert, Ph.D. University of Kiel, *Research Professor of German* (modern German literature)

Glenn S. Levine, Ph.D. University of Texas, Austin, *German Language Program Director and Assistant Professor of German* (applied linguistics, pedagogy, German-Jewish culture and literature)

William J. Lillyman, Ph.D. Stanford University, *Executive Vice Chancellor (Interim) and 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, *Department Chair and 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, *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 UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See pages 203–204.

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, 10, 20; 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. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Distinguished Visiting Professors

The Department's Distinguished Visiting Professors program brings students into direct contact with some of the outstanding scholars in the field of German Studies. Distinguished Visiting Professors typically visit for one quarter, during which they teach a graduate course and an undergraduate course and present a lecture to which students, faculty, and other members of the University community are invited. Program participants include Bengt Algot Sørenson (Odense), Uwe Ketelsen (Bochum), Peter Pütz (Bonn), Leslie Adelson (Ohio State), Hans Wysling (Zürich), Hans-Wolf Jäger (Bremen), Norbert Oellers (Bonn), Hans Rudolf Vaget (Smith College), Heinrich Detering (Göttingen), Wolfgang Martens (Munich), Anna Kuhn (UC Davis), Renate Möhrmann (Köln), Ülker Gökberk (Reed College), Stephanie Hammer (UC Riverside), Helmut Schneider (Bonn), Richard Gray (University of Washington), and Uwe Steiner (Berlin).

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. Emphasizes the development of meaningful communicative skills in German for the purposes of interaction with German speakers and beginning study of German. With a learner-centered approach the courses help students develop speaking, listening, reading, writing, and cultural skills and knowledge. Prerequisite for German 1A: none; for German 1B: German 1A with a grade of C or better, one to two years of high school German, or the equivalent (UCI placement test required); for German 1C: German 1B or S1AB with a grade of C or better, two to three years of high school German, or the equivalent (UCI placement test 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 a time-intensive form. Equivalent to German 1A-B-C during the academic year. For description, see German 1A-B-C. Prerequisite for German S1AB: none; for S1BC: German S1AB or 1B with a grade of C or better, or the equivalent (UCI placement test required). 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. Emphasizes the development of meaningful communicative skills in German for the purposes of interaction with German speakers and intermediate study of German. With a learner-centered approach, the courses help students develop reading, writing, speaking, listening, grammatical, and cultural skills and knowledge. First-year grammar is reviewed and expanded. Prerequisite for German 2A: German 1C or S1BC with a grade of C or better, three to four years of high school German, or the equivalent (UCI placement test required); for German 2B: German 2A with a grade of C or better, or the equivalent (UCI placement test required); for German 2C: German 2B or S2AB with a grade of C or better, or the equivalent (UCI placement test required). German 2A-B-C and S2AB-S2BC may not both be taken for credit. (2A: **VI**)

S2AB-BC Intermediate German (6-6) Summer. Second-year German in a time-intensive form. Equivalent to German 2A-B-C during academic year. For description see German 2A-B-C. Prerequisite for S2AB: German S1BC or 1C, three to four years of high school German, or the equivalent (UCI placement test required); for S2BC: German 2B or S2AB with a grade of C or better, or the equivalent (UCI placement test required). German S2AB-S2BC and German 2A-B-C may not both be taken for credit. (S2AB: **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 or consent of instructor.

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, 150, and 160.

100 Advanced German. Competence in reading, writing, and speaking German. Prerequisite: German 2C or equivalent or consent of instructor.

100A Advanced Reading (4). Competence in reading expository German with emphasis on vocabulary expansion, comprehension of complex syntactical structures, and cultural literacy. Topics such as women in the Nazi period, reading the German news. **(VII-B)**

100B Advanced Writing (4). Competence in writing German including selected specialized skills and vocabulary. Topics such as business German, the art of letter writing. **(VII-B)**

100C Advanced Oral Communication (4). Oral proficiency with emphasis on active listening, communication skills, discussion strategies, and pronunciation. Topics such as the art of conversation, media and mass communication. **(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 2000-2001.*

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 and Culture 750–1750 (4). Specific course content determined by individual faculty members. Example: Luther and the European Renaissance. **(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. **(VII-B)**

119 Studies in Nineteenth-Century German Literature and Culture (4). Individual authors such as Büchner, Grillparzer, Keller, and Nietzsche, or broader social-literary phenomena. **(VII-B)**

120 Studies in Twentieth-Century German Literature and Culture (4). Individual authors such as Thomas Mann, Brecht, and Kafka, or topics addressing questions of genre and/or social-literary problems. **(VII-B)**

130 Topics in German Literature and Culture (4). Literary and cultural topics not fully contained within the periods listed above, such as "German Comedy" and "Turn-of-the-Century Vienna." May be repeated for credit as topics vary.

139 Writing about Literature and Culture (4). In English. Requires at least 4,000 words of assigned composition based upon readings in Germanic literatures and cultures. Several essays required. Topics vary. German majors given admission priority. Prerequisites: satisfactory completion of the lower-division writing requirement; junior standing or consent of instructor.

140 Topics in Literary Theory and Criticism (4). In English. Theoretical dimensions of literary criticism and the German philosophical tradition. Topics such as Marxism, Freudian thought, the German Idealistic tradition of aesthetics, Historicism, twentieth-century hermeneutics, Frankfurt School, and *Rezeptionsaesthetik* are explored in a selection of theoretical, critical, and literary texts.

150 German Literature and Culture in Translation (4). In English. Major works in Germanic literature and culture in context. Prerequisite applicable only when offered as an upper-division writing course: upper-division standing and satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

160 German Cinema (4). Historical, theoretical, and comparative perspectives on German cinema. Same as Film Studies 160 when topic is appropriate. **(VII-B)**

199 Individual Study (1 to 4) F, W, S. May be repeated for credit as topics vary.

GRADUATE

All graduate courses offered in the Department fall under the generic titles German 200, 210, 220, and 230. Course titles and contents change according to the instructor teaching them; courses offered under these numbers may be repeated for credit provided the content has changed. Complete course descriptions are available quarterly from the Department 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

200 Murray Krieger Hall; (949) 824-6521
Kenneth L. Pomeranz, **Department Chair**

Faculty

Sharon B. Block, Ph.D. Princeton University, *Assistant Professor of History* (early American, feminist theory and gender studies)
Carolyn P. Boyd, Ph.D. University of Washington, *Professor of History* (Europe, Spain)
Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Professor of History* (American culture, African-American history)
Yong Chen, Ph.D. Cornell University, *Associate Professor of History and Asian American Studies* (Asian American history)
Alice Fahs, Ph.D. New York University, *Associate Professor of History* (U.S. intellectual/cultural history)
Thelma Foote, Ph.D. Harvard University, *Associate 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 Emeritus 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, *Director of the Program in Russian Studies and 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, *Associate Dean of the School of Humanities and Professor of History* (modern Germany, European women)
Keith L. Nelson, Ph.D. University of California, Berkeley, *Professor of History* (American foreign relations)
Spencer C. Olin, Ph.D. Claremont Graduate School, *Professor Emeritus of History* (American social and political)
Kenneth L. Pomeranz, Ph.D. Yale University, *Department Chair of History and Professor of History, East Asian Languages and Literatures, and Social Ecology* (modern Chinese)
Mark S. Poster, Ph.D. New York University, *Professor of History, Film Studies, and Information and Computer Science* (modern European intellectual)
Jaime E. Rodríguez, Ph.D. University of Texas, *Director of Latin American Studies and Professor of History* (Latin America, Mexico)
Daniel Schroeter, Ph.D. University of Manchester, *Professor of History and Teller Family Chair in Jewish History* (Jewish history, Middle East and North Africa)
Ulrike Strasser, Ph.D. University of Minnesota, *Assistant Professor of History* (early modern continental Europe)
Timothy Tackett, Ph.D. Stanford University, *Professor of History* (Old Regime Europe, French Revolution)
Heidi Tinsman, Ph.D. Yale University, *Assistant Professor of History* (Latin America)
Steven C. Topik, Ph.D. University of Texas, *Professor of History* (Latin America)
Anne Walthall, Ph.D. University of Chicago, *Professor of History and of East Asian Languages and Literatures* (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, *Director of the Minor in Asian Studies and Professor of History and of East Asian Languages and Literatures* (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 UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See pages 203–204.

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), or East Asian history (History 43A, 43B, 43C); and four upper-division History courses.

Residence Requirement for the Minor: At least four upper-division History courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

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. A colloquium series is offered annually in American history; biannually (depending on demand) in modern European history, early modern European history, Latin American history, East Asian history, world 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 their 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.

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 four years. At the end of this period an oral defense of the dissertation, focusing on the adequacy of the student's research and thesis, will normally be held.

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 seven 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 The Holocaust (4). Introduction to the history of European Jewish communities before the Holocaust; the origins of Nazi antisemitism; the implementation of the "Final Solution"; Jewish resistance to the Nazis; and attempts in film and literature to represent the Holocaust since 1945. **(VII-B)**

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. **(VII-A)**

15B African-American Studies I (4). Introduction to the main contours of the African-American experience from the importation of Africans into the Americas to the present. Focuses on the unique expressions of African-American society and culture. Same as African-American Studies 40A. **(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 Asian American Studies 60A and Social Sciences 78A. **(III, 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. **(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. History 60 and Education 130 may not both be taken for credit. **(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)

105B Later Roman Empire (4)

105C The Classical Tradition (4)

EUROPEAN HISTORY

110 Medieval Europe

110A Europe in the Early Middle Ages (4). Survey of Europe between 300 A.D. and 900 A.D. Topics include the breakup of the Roman Empire, barbarian invasions, spread of Christianity, rise of Islam, the Carolingian Empire, and the Vikings. **(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.

112 Early Modern Europe

112A Renaissance Europe (4). Survey of the Renaissance in Italy and northern Europe.

112B Reformation Europe (4). Survey of the Protestant and Catholic Reformations in sixteenth- and seventeenth-century Europe.

112C Europe of the Old Regime (4). Survey of the social, cultural, and political history of Europe from the middle of the seventeenth century to the French Revolution. **(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. **(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. **(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. **(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. **(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. **(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. **(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. **(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. **(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). (VII-B)

120C France in the Nineteenth Century (4). (VII-B)

120D France in the Twentieth Century: 1914 to Present (4). (VII-B)

122 Germany. Political, social, and economic history from 1815 to the present.

122A Emergence of the German Nation: 1815–1890 (4). (VII-B)

122B Hitler and the Germans (4). Focuses on Hitler's rise to power and Nazi society. Examines Germany's defeat in World War I; the political and cultural experimentation of the 1920s; the causes of Hitler's success; and life in Germany under the Nazis. **(VII-B)**

122C World War, Cold War, and Reunification: 1939– (4). (VII-B)

124 Russia. Political and social developments from traditional Russia to the present Soviet society.

124A Imperial Russia: 1689–1905 (4). (VII-B)

124B Twentieth-Century Russia (4). (VII-B)

126 European International History. Europe and world politics; the wars and diplomacy of the major powers.

126A The Era of World War I: 1900–1939 (4). (VII-B)

126B World War II: 1939–45 (4). (VII-B)

126C The Cold War and After: Europe and the World, 1945–91 (4). (VII-B)

127 European Cultural and Intellectual History. Main currents of Western thought, emphasizing English, French, and German thinkers.

127A Enlightenment Europe (4). (VII-B)

127B Hegel to Nietzsche (4). (VII-B)

127C Freud to Sartre (4). (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. **(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. **(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. **(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. **(IV)**

139 History and Prose Composition (4). Requires at least 4,000 words of assigned composition based upon historical works. History majors are given admission priority. Prerequisites: satisfaction of the lower-division writing requirement; junior standing or consent of instructor. May be repeated for credit as topics vary.

AMERICAN HISTORY

140 The Development of the American Nation. Growth of a distinctively American society out of the colonial heritage, with emphasis on social and economic bases of culture and politics, sectionalism, industrialization, and the United States as a world power.

140A Early America: 1492–1740 (4). Examines the history of the land that became the first 13 states of the United States, from early attempts at exploration and discovery to the economic growth and demographic heterogeneity that marked the white settlements of the early 1700s.

140B Revolutionary America: 1740–1790 (4). An exploration of why 13 continental colonies, whose commercial and cultural connections with Britain far exceed their interaction with one another, resisted imperial reform after 1763 to the point of war in 1775 and independence the following year.

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.

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.

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.

146A American Women to 1820 (4). (VII-A)

146B United States Women: 1820–1980 (4). (VII-A)

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. **(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. **(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.

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 U.S. Foreign Relations Since World War II (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. **(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. **(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. **(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. **(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. **(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. **(VII-B)**

171 Japan

171A Age of the Samurai (4). Topics include the simultaneous elaboration of a civilian aristocratic tradition and the military ethos, the conflict between martial and economic values in the context of an expanding economy, and the development of Japan's indigenous religions, art, and literature. **(VII-B)**

171B Imperial Japan (4). Topics in the rise of modern Japan include the relationship between centralization and imperialism, democracy and fascism, industrialization and feminism in the context of the complex and competing forces that shaped Japan's experience in the modern world. **(VII-B)**

171C Postwar Japan (4). From the ashes of defeat to economic superpower, from poverty to material consumerism, from the ethic of diligence and fortitude to hedonism. Addresses what these changes have meant for ordinary people, as well as government policy and Japan's international position. **(VII-B)**

172 Topics in Asian History (4). May be repeated for credit as topics vary. **(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. **(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. **(VII-B)**

SPECIAL STUDIES

Topics with particular methodological foci. Content varies; departmental office has quarterly list of topics. May be repeated for credit as topics vary.

180 Special Studies in Social History (4)

181 Special Studies in Economic History (4)

182 Special Studies in Intellectual-Cultural History (4)

183 Special Studies in International History (4)

184 Special Studies in Comparative History (4)

185 Special Studies in Social Theory (4)

HISTORICAL RESEARCH FOR HISTORY MAJORS

190 Colloquium (4). Specialized courses dealing primarily with close reading and analysis of 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.

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.

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 (1 to 4). Investigation of special topics through directed reading. Paper required. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

GRADUATE COURSES

In addition to the following courses, graduate students in History might find Humanities 220 (Literary Theory and Its History) and Humanities 270 (Advanced Critical Theory) to be of interest.

HISTORY AND THEORY

200A, B, C History and Theory (4, 4, 4) F, W, S. Introduction to role of theory in historical writing, focusing on several major theorists, their relation to their setting, the structure of their thought, and its application to significant historical issues. Completion of History 200A and 200B is required for all History 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. *Not offered every year.*

230A Europe: 1789-1848 (4)

230B Europe: 1850-1914 (4)

230C Europe: 1914-1989 (4)

240 The Literature and Interpretations of World History. *Not offered every year.*

240A Approaches to World History (4)

240B Topics in World History (4)

240C Advanced Research in World History (4)

250 The Literature and Interpretations of Latin American History. *Not offered every year.*

250A Colonial Period (4)

250B Nineteenth Century (4)

250C Twentieth Century (4)

260 The Literature and Interpretations of American History

260A Seventeenth and Eighteenth Centuries (4)

260B Nineteenth Century (4)

260C Twentieth Century (4)

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 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. By petition, two of the five may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Minor in Humanities and Law

168 Humanities Instructional Building; (949) 824-8119

Participating Faculty

Jeffrey Barrett, *Associate Professor of Logic and Philosophy of Science*
Ermanno Bencivenga, *Professor of Philosophy*
Yong Chen, *Associate Professor of History and Asian American Studies*
Lara Denis, *Assistant Professor of Philosophy*
James B. Given, *Professor of History*
Gail Hart, *Professor of German*
Lamar M. Hill, *Professor of History*
Marcia Klotz, *Assistant Professor of German and Film Studies*
Richard W. F. Kroll, *Associate Professor of English*
Steven Mailloux, *Professor of English*
Alejandro Morales, *Professor of Spanish*
Robert Newsom, *Associate Dean of the Division of Undergraduate Education and Professor of English*
Victoria Silver, *Associate Professor of English*
Preston Kyle Stanford, *Assistant Professor of Logic and Philosophy of Science and of Philosophy*
Brook Thomas, *Professor of English*

The minor in Humanities and Law is based on courses in the humanities that UCI graduates have found to be useful in developing skills that prepare them for law-related careers. One set of courses develops skills in critical reading, writing, and analysis that are necessary in dealing with legal issues. Another set presents theoretical and analytical perspectives on ethical, political, and social issues relevant to the law. A final set focuses on specific legal issues from a humanistic perspective. Lower-division requirements primarily develop foundational skills in the first set, whereas upper-division requirements build on these skills by addressing the concerns from the other sets. The minor does not include how-to courses on particular legal practices.

Requirements for the Minor

Lower-Division: Philosophy 29 (Critical Reasoning) or Classics 75 (Classical Rhetoric); Humanities 1A-B-C (Humanities Core Course) or Philosophy 1 (Introduction to Philosophy), 4 (Introduction to Ethics), and either 5 (Contemporary Moral Problems) or 9 (Feminist Moral and Political Philosophy).

Upper-Division: Six courses from among a list of quarterly approved courses. Each year the list will include courses from classics, history, literature/writing, and philosophy. Consult the School of Humanities Web site (http://www.humanities.uci.edu) or an academic counselor for currently approved courses.

Students considering a career in law are strongly encouraged to take advantage of other law-related courses offered across the campus and of extracurricular activities such as the Pre-Law Society.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be successfully completed at UCI. Two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

Interdisciplinary Minor in Latin American Studies

300 Murray Krieger Hall; (949) 824-7244
Jaime E. Rodríguez, **Director**

Faculty

Frank D. Bean, Ph.D. Duke University, *Professor of Sociology*
Carolyn P. Boyd, Ph.D. University of Washington, *Professor of History*
Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish*
Alison Brysk, Ph.D. Stanford University, *Assistant Professor of Political Science*
Teresa Caldeira, Ph.D. University of California, Berkeley, *Associate Professor of Anthropology*
Frank Cancian, Ph.D. Harvard University, *Professor Emeritus of Anthropology*
Leo Chávez, Ph.D. Stanford University, *Professor of Anthropology*
Raúl Fernández, Ph.D. Claremont Graduate School, *Professor of Social Sciences*
Ana Paula Ferreira, Ph.D. New York University, *Associate Professor of Portuguese*
Laura García-Moreno, Ph.D. Cornell University, *Assistant Professor of Comparative Literature*
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, *Director of Chicano/Latino Studies and Professor of Anthropology*
Lucía Guerra-Cunningham, Ph.D. University of Kansas, *Professor of Spanish*
Ivette N. Hernández-Torres, Ph.D. Brown University, *Assistant Professor of Spanish*
Helen Ingram, Ph.D. Columbia University, *Professor of Social Ecology and Political Science, and Drew, Chace, and Erin Warmington Chair in the Social Ecology of Peace and International Cooperation*
William M. Maurer, Ph.D. Stanford University, *Assistant Professor of Anthropology*
Seymour Menton, Ph.D. New York University, *Research Professor of Spanish and Portuguese*
Alejandro Morales, Ph.D. Rutgers University, *Professor of Spanish and Chicano/Latino Studies*

Jaime E. Rodríguez, Ph.D. University of Texas, *Director of Latin American Studies and Professor of History*
John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Director (Interim) of African-American Studies and Professor of English*
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, *Chair of the Department of Spanish and Portuguese and Associate 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, *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, *Professor of History*
Roberto Villaverde, Ph.D. University of Illinois, Urbana, *Professor of Civil Engineering*
Juan Villegas, Ph.D. Universidad de Chile, *Research Professor of Spanish*
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.

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.

Humanities 100 (Latin America and the Caribbean).

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 100C (Introduction to Spanish American Literature: Pre-Hispanic to Nineteenth Century), 100D (Introduction to Spanish American Literature: Nineteenth and Twentieth Centuries), 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 (Latin America: Pre-Columbian Civilizations and European Colonization, 1200–1750), 42B (Latin America: Independence and the Nineteenth Century), 42C (Latin America: Twentieth Century), 161A (Indian and Colonial Societies in Mexico), 161B (Nineteenth-Century Mexico), 161C (Twentieth-Century Mexico), 162 (Brazil), 166 (United States–Latin America Relations), 169 (Topics in Latin American History), 190 (Colloquium, when topic is on Latin America); Spanish 100E (Introduction to Chicano and U.S. Latino Literature).

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); Social Science 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); Spanish 110C (Chicano History), 140A, B (Chicano Literature), 142 (Chicano Culture), 186 (Selected Topics in Latin American Literature, when topic is on Chicano literature); Social Sciences 172D (Chicano Culture).

Four courses in Latin American studies selected from: any of the courses listed above in the literature, history, and social sciences requirements; Spanish 110A (Peninsular Civilization, when topic is on Latin America), 110B (Latin American Civilization); Portuguese 141 (Luso-Brazilian Civilization); Anthropology 121J (Urban Anthropology, when the topic is on Latin American countries); Biological Sciences 199A-B-C (Independent Study in Biological Sciences Research, when topic is medicinal biology and herbs in Mexico).

With the approval of the director, other relevant courses also may satisfy the requirements for the minor.

Residence Requirement for the Minor: Four upper-division courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Interdisciplinary Minors

Interdisciplinary minors in African-American Studies, Asian American Studies, Latin American Studies, and Women's Studies are available through the School of Humanities. For information about the minors noted below, see the Interdisciplinary Studies section of the *Catalogue*.

The minor in Asian Studies creates opportunities for students to explore Asian topics in a variety of fields, to develop advanced language skills, and to acquire broader perspectives.

The minor in Chicano/Latino Studies is designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, film, drama, music) accomplishments in the Chicano/Latino communities.

The minor in Conflict Resolution provides skills in conflict analysis and resolution and a useful understanding of integrative institutions at the local, regional, and international levels.

The minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

The minor in the History and Philosophy of Science explores how science is actually done and how it has influenced history, and is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences.

The minor in Native American Studies focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis.

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.

Concentration in Medieval Studies

174 Murray Krieger Hall; (949) 824-5441
Linda M. Georgianna, **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 Medieval Cities, The Dark Ages, Medieval Liturgy and Theater, Medieval Women, and The Plague. In addition, students must complete at least four additional courses in medieval studies selected from an approved quarterly list. One of these four courses may be satisfied by completing a senior essay in some area of medieval studies.

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

200 Humanities Instructional Building; (949) 824-6781

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 nonverbal communication. Pass/Not Pass only. Prerequisite: ESL placement examination. Primarily for graduate students.

Humanities 21B ESL Speaking and Listening (2). Further development of listening and speaking skills: oral reporting, panel presentation, functional/situational dialogue, and public argumentation and debate. Primarily for graduate students. Pass/Not Pass only. Prerequisite: ESL placement examination.

Humanities 22A ESL Reading and Vocabulary (2). Intensive reading exercises with occasional practice in extensive reading, focusing on comprehension, development of vocabulary, syntax, rhetorical features, reading strategies, and study skills. Pass/Not Pass only. Corequisite: concurrent enrollment with Humanities 20A-B. Prerequisite: ESL placement examination.

Humanities 22B ESL Reading and Vocabulary (2). Extensive reading with emphasis on long magazine and journal articles, short stories, textbook chapters, notetaking, and the interpretation of charts, diagrams, tables, and figures. Pass/Not Pass only. Prerequisite: ESL placement examination.

Humanities 29 Special Topics in ESL (1 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

The following set of courses has no necessary relation to the undergraduate interdisciplinary major in Humanities. Most of the courses are open to any UCI student. Humanities 1A-B-C is required for the major in Humanities, as it is a requirement of any student majoring in the School of Humanities. Also, Humanities 199 is required of any undergraduate in the School who is approved to complete an interdisciplinary major in Humanities.

1A-B-C The Humanities Core Course (8-8-8) F, W, S. This course is restricted to students who are beginning their first year of college-level work. Each year it deals with problems of concern to the humanistic disciplines including interdisciplinary perspectives on major themes in history, literature, and philosophy. Focuses on major texts and works of art from a range of different cultural traditions. A writing program is integral to the course and counts for half the grade each quarter. Students are taught to think, speak, and write clearly about the issues raised in the texts and addressed in lectures. Students held for Subject A will earn an additional two units of workload credit, and *must* take the course for a letter grade. 1A is prerequisite to 1B, and 1B is prerequisite to 1C. (1A-B-C: **I, IV;** 1C: **VII-A**)

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)**

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)**

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, VII-B)**

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.

UPPER-DIVISION

100 Latin America and the Caribbean (4). This foundational course in Latin American and Caribbean studies begins with discussions of the social, cultural, economic, and political process tracing the events from Pre-Conquest to present which have circumscribed the insertion of this region into the world economy. **(VII-B)**

101A-B European Studies Core I, II (4-4). Introduces students to multidisciplinary approaches to important themes in European society, culture, literature, art, and politics, encouraging students to see points of intersection among disciplines. Possible themes: Subjects, Citizens, and Representation; Europe in the World; European Revolutions in Art and Society. **101A:** Early modern Europe (about 1500–1750); **101B:** Modern Europe (1750–present). Prerequisite: satisfactory completion of the lower-division writing requirement.

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.

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.

H120 Honors Proseminar (4) F, W, S. Interdisciplinary Honors courses organized each year around a single topic or problem designed to compare and contrast modes of analysis in history, literary studies, and philosophy. Required of participants in the Humanities Honors Program. Prerequisites: consent of instructor and the Humanities Honors Program Committee. May be taken three times for credit as topics vary.

H140 Senior Honors Seminar (4) F. Directed by the Humanities Honors Thesis Advisor and required of students in the Humanities Honors program and Humanities majors in the Campuswide Honors Program. Designed to facilitate the exchange of ideas and research strategies among Honors students and to begin the process of writing the senior honors thesis. Prerequisites: senior standing and consent of the Honors Program Committee.

H141 Senior Honors Thesis (4) W. Directed independent research required of participants in the Humanities Honors Program and Humanities majors in the Campuswide Honors Program. Prerequisites: Humanities H140; consent of Honors Program Committee.

H142 Senior Honors Colloquium (4) S. Completion, presentation, and discussion of Senior Honors Theses. Satisfies upper-division writing requirement. Prerequisites: Humanities H141 and consent of Humanities Honors Program Committee.

183A Global Peace and Conflict Studies Forum (2). A faculty-student forum featuring lecturers from a variety of institutions with discussion issues related to global peace and conflict studies. Pass/Not Pass only. May be taken for credit four times. Same as Social Ecology 183A and Social Science 183A.

183B Senior Seminar in Conflict Resolution (4). Designed for seniors (juniors may also enroll) who are pursuing the minor in Conflict Resolution and/or International Studies major. Provides a forum in which students will refine skills and theory in the study of cooperation and conflict, from local to global arenas. Same as Social Ecology 183B and Social Science 183B. **(VII-B)**

183C Senior Seminar in Conflict Resolution (4). Continuation of Humanities 183B. Students write a senior research paper. Prerequisite: Humanities 183B and satisfaction of the lower-division writing requirement. Same as Social Ecology 183C and Social Science 183C.

190 Senior Seminar in European Studies (4). Capstone research seminar. Students engage in rigorous, in-depth, interdisciplinary exploration of specific topics, periods, or themes, investigating and analyzing the intersection of material and discursive culture in different historical periods and geographical locations. Topics vary. Prerequisites: Humanities 101A-B and consent of instructor.

195 Humanities Out There (H.O.T) Tutoring (2) F, W, S. H.O.T. sponsors five-week workshops on selected topics in the humanities. Each workshop sends out a team of undergraduates to a K–12 classroom to develop college skills for Santa Ana students. Requirements: five training sessions; five tutoring sessions; two electronic journals; short paper. Pass/Not Pass only. May be taken for credit four times.

197 Individual Field Study (varying credit) F, W, S. Individually arranged field study. Prerequisite: consent of instructor.

198 Directed Group Study (1 to 4) F, W, S. Directed group study on special topics. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

199 Directed Research (1 to 4) F, W, S. Directed research for senior Humanities students. Prerequisite: senior standing and consent of instructor. May be repeated for credit as topics vary.

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 Study or the graduate advisor in their major department.

Emphasis in Critical Theory

443 Murray Krieger Hall; (949) 824-1601
Chungmoo Choi, **Director**

Faculty in the Critical Theory Emphasis

Stephen Barker, *Professor of Drama*
Lindon W. Barrett, *Associate Professor of English*
Ermanno Bencivenga, *Professor of Philosophy*
Rhona Berenstein, *Director of the Program in Film Studies and Associate Professor of Film Studies*
Homer Obed Brown, *Professor of English*
Ellen Burt, *Associate Professor of French*
David Carroll, *Department Chair of French and Italian and Professor of French*
Chungmoo Choi, *Director of the Emphasis in Critical Theory and Associate Professor of Korean Culture*
Michael Clark, *Professor of English*
Jacques Derrida, *Professor of French, Philosophy, and Comparative Literature*
Anne Friedberg, *Associate Professor of Film Studies*
Suzanne Gearhart, *Professor of French*
Alexander Gelley, *Professor of Comparative Literature*
Lucia Guerra-Cunningham, *Professor of Spanish*
James D. Herbert, *Professor of Art History*
Wolfgang Iser, *Professor of English*
Murray Krieger, *University Research Professor of English*
Richard W. Kroll, *Associate Professor of English*
Julia Reinhard Lupton, *Associate Professor of Comparative Literature*
Juliet Flower MacCannell, *Professor Emerita of Comparative Literature*
Steven Mailloux, *Professor of English*
Liisa Malkki, *Associate Professor of Anthropology*
J. Hillis Miller, *UCI Distinguished Professor of English and Comparative Literature*
Gonzalo Navajas, *Professor of Spanish*
Jane O. Newman, *Professor of Comparative Literature*
Margot Norris, *Department Chair and Professor of English and Comparative Literature*
Mark Poster, *Professor of History and of Information and Computer Science*
Leslie Rabine, *Associate Dean of Humanities Graduate Study and Professor of French*
John Carlos Rowe, *Director (Interim) of African-American Studies and Professor of English*
Gabriele Schwab, *Director of the Critical Theory Institute and Professor of English and Comparative Literature*
Martin Schwab, *Associate Professor of Comparative Literature and Philosophy*
Patrick J. Sinclair, *Department Chair and Associate Professor of Classics*
David W. Smith, *Professor of Philosophy*
John H. Smith, *Professor of German*
James Steintrager, *Assistant Professor of Comparative Literature*
Brook Thomas, *Professor of English*
Andrzej Warminski, *Director of the Comparative Literature Program and Professor of Comparative Literature*
Robyn Wiegman, *Director of the Program in Women's Studies and Associate Professor of Women's Studies, African-American Studies, and English*

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 (which may be part of the dissertation) written under the guidance of a three-member committee selected by each individual student in consultation with the Director.

Graduate Courses in Humanities

Graduate courses in Humanities are under the direction of the School's Associate Dean for Graduate Study and are designed for all graduate students in the School of Humanities.

Humanities 200 and 220 introduce study in various disciplinary areas, either to students planning a degree in history or one of the literature departments or to those seeking familiarity with disciplines other than their own.

200A, B, C History and Theory (4, 4, 4) F, W, S. Introduction to role of theory in historical writing, focusing on several major theorists, their relation to their setting, the structure of their thought, and its application to significant historical issues. Same as History 200A, B, C.

220A, B, 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.

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.

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.

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; (949) 824-6525
E-mail: philos@uci.edu
Alan Nelson, **Department Chair**

Faculty

Ermanno Bencivenga, Ph.D. University of Toronto, *Professor of Philosophy* (logic, history of philosophy, philosophy of language)
William Bristow, Ph.D. Harvard University, *Assistant Professor of Philosophy* (Kant, nineteenth-century European philosophy)
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)
Alan Nelson, Ph.D. University of Illinois at Chicago, *Department Chair and Professor of Philosophy* (history of philosophy, philosophy of science)
Nelson C. Pike, Ph.D. Harvard University, *Professor Emeritus of Philosophy* (philosophy of religion, history of philosophy)
Gerasimos Santas, Ph.D. Cornell University, *Professor of Philosophy* (ancient philosophy, history of philosophy, ethics)
Martin Schwab, Ph.D. University of Bielefeld, *Associate Professor of Comparative Literature and Philosophy* (aesthetics, philosophy of mind)
David W. Smith, Ph.D. Stanford University, *Professor of Philosophy* (phenomenology, metaphysics, epistemology, existentialism)
Preston Kyle Stanford, Ph.D. University of California, San Diego, *Assistant Professor of Logic and Philosophy of Science and of Philosophy* (philosophy of science, history of philosophy)
Peter Woodruff, Ph.D. University of Pittsburgh, *Professor Emeritus 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 Philosophy*
Donald Hoffman, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences and of Information and Computer Science*
Ruth Barcan Marcus, Ph.D. Yale University, *Visiting Professor of Philosophy*
Robert May, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics and 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 UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Undergraduate Program

Instruction in philosophy relies essentially upon discussion in which students are active participants. Wherever possible, therefore, classes are 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 Philosophy majors whose intention may be either to enter some professional school upon graduation (e.g., law) or to engage in graduate work in philosophy.

The faculty encourages Philosophy majors and minors to seriously consider expanding their perspective through an experience of study abroad. The Center for International Education, which

includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of many worldwide opportunities for study and research. Specifically, those interested in analytic philosophy could consider the EAP programs in the United Kingdom, Canada, Sweden, Australia, and New Zealand, and those interested in Continental philosophy could consider the EAP programs in France, Germany, and Italy. See the Center for International Education section of the *Catalogue* or your academic counselor for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See pages 203–204.

Departmental Requirements for the Major

Philosophy 30 or 104; 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, 30 or three courses selected from Philosophy 1, 6, 7, 30 or three courses selected from Philosophy 10, 11, 12, 13, 30.

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 completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Graduate Program

The Ph.D. program in Philosophy is jointly and cooperatively administered by the Department of Philosophy in the School of Humanities and the Department of Logic and Philosophy of Science (LPS) in the School of Social Sciences. The graduate program has two distinct tracks—the Philosophy track and the LPS track—both of which begin from a common core of shared requirements in history of philosophy, logic, ethics, and metaphysics/epistemology. Students are advised to apply to the track whose faculty, areas of specialization, and curriculum most closely correspond to their interests. The Philosophy track is described here. See the Department of Logic and Philosophy of Science for a description of the LPS track.

Students in the Philosophy track are encouraged to seek the counsel of any and all members of the Philosophy Department and the Logic and Philosophy of Science 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 the advanced degree. In addition, the Philosophy Department sponsors a series of colloquia each year. Participation in these colloquia is an important part of the graduate student's training. The Logic and Philosophy of Science Department also sponsors colloquia that might be of interest to Philosophy track students.

Every new graduate student is assigned a faculty member whose purpose is to oversee the student's progress through the major requirements for the advanced degree. The student consults with this faculty member each quarter about progress and any administrative or academic difficulties. Each student's overall record is evaluated by the Philosophy Department each year, customarily during the first two weeks of April. When the student has satisfied the residency requirement and the history, logic, field, tools of research, and portfolio requirements, the Candidacy Committee supervises the qualifying examination and the development of a dissertation project, and the subsequent writing of the dissertation itself. The Chair of this committee is the principal person with whom the graduate student will consult on the dissertation.

MASTER OF ARTS IN PHILOSOPHY

There is no list of courses required for the M.A. degree. The M.A. program in Philosophy takes one year at a minimum. The student may elect to follow either of the following routes to the degree: write a thesis on a subject to be chosen in consultation with an advisor and defend the thesis in an oral examination, or satisfy the logic and portfolio requirements for the Philosophy track. Refer to the 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 Philosophy track, so that work can be tailored to the individual student's needs and interests. However, as a prerequisite for the Ph.D. degree, every student is required to have some experience in teaching.

The Philosophy track 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 areas: Ancient, Medieval, Modern Empiricism, Modern Rationalism, Kant, Nineteenth Century, and Twentieth Century.
2. Field. To satisfy this requirement, students must receive a grade of B or better in two courses in value theory and one course in metaphysics/epistemology.

These requirements must be completed by the end of the seventh quarter in residence.

Logic Requirement. Students must receive a grade of B or better in an approved logic course. 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 Philosophy Department Director of Graduate Studies) when they bear on a student's area of philosophical concentration. Though the courses must be in a discipline other than philosophy, they may in fact be taught in the Philosophy Department or the LPS Program (e.g., a course in mathematical logic taught by an LPS faculty member).

This requirement must be completed by the end of the ninth quarter in residence.

The Portfolio. A portfolio is an extended writing sample designed to demonstrate a student's ability (a) to understand, analyze, and evaluate positions and arguments in classical and contemporary philosophical literature, and (b) to formulate and defend an original philosophical thesis. These virtues must be displayed at a level of sophistication that indicates the student's ability to write a Ph.D. dissertation.

The portfolio must be submitted to the Graduate Coordinator at the end of the fourth week of the student's seventh quarter in residence. Portfolios will be evaluated by the entire faculty of the Philosophy Department. (Philosophy track students may request that relevant LPS faculty also be present at the evaluation meeting.)

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 Philosophy 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 Philosophy 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

The Department of Philosophy and the Department of Logic and Philosophy of Science jointly administer an Exchange Program with the University of Salzburg. The program has two parts. The Scholarly Exchange provides opportunities for faculty and graduate students in Philosophy and LPS to visit Salzburg and for faculty and graduate students from Salzburg to visit one or the other of the UCI units. The Program also sponsors joint conferences, held alternately in Irvine and in Salzburg; these are co-sponsored by Salzburg and the UCI Interdisciplinary Program in the History and Philosophy of Science.

To be eligible for the Salzburg Exchange, a graduate student must have advanced to candidacy. The selected student spends one semester in Salzburg, usually teaching one course in the general area of the thesis topic. An upper-division course may be taught in English, but lower-division courses must be taught in German. (Some previous visitors have learned serviceable German by attending a Goethe institute during the preceding summer.) Typically, a Salzburg visitor will receive a Salzburg Fellowship intended to cover travel expenses, and a stipend; those who teach while in Salzburg will also receive a salary intended to cover living expenses (including health and dental insurance).

Application should be made to the Philosophy Department's Salzburg Exchange Director by November 1 and should include a curriculum vita and syllabi for possible courses to be taught. The Director and/or the Philosophy Department Graduate Coordinator should be consulted for further information.

EMPHASIS IN CRITICAL THEORY

The School of Humanities offers an emphasis in Critical Theory that can be appended to the Philosophy track. A student interested in the emphasis begins by taking the three-quarter Critical Theory Workshop. With the recommendation of a workshop instructor or a Critical Theory faculty member in the Philosophy Department, the student may then apply to the Critical Theory Committee for admission to the emphasis. Emphasis students must complete the following requirements in addition to the usual Philosophy track requirements.

The Critical Theory Workshop. Students must successfully complete the three-quarter Critical Theory Workshop. This sequence is conceived as a reading group, normally conducted by a team of instructors, and developed with the input of all participants. Significant texts are discussed and analyzed in class; no term papers are required. (Students receive 0 units and In-progress grades for the fall and winter quarters; passing students receive 4 units and a Satisfactory grade for the spring quarter.

Advanced Critical Theory Requirement. Students must receive a grade of B or better in three Humanities 270 courses offered under the supervision of the Critical Theory Committee. At least three such courses will be offered each year. With the approval of the Philosophy Department, these courses can be used to satisfy the tools of research requirement.

Mini-Seminar Requirement. Students must participate in two committee-sponsored mini-seminars (six–eight hours each) offered by visiting scholars on their ongoing research.

Research Paper Requirement. Students must complete a research paper under the guidance of a three-member committee, selected in consultation with the Director; at least one member must be from outside of the Philosophy Department. This paper may (but need not) be part of the portfolio or dissertation.

Upon completion of the emphasis requirements, a letter certifying that fact, signed by the Dean of Humanities and the Director of the Critical Theory Emphasis, will be added to the student's dossier.

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)**

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. Same as Social Science 29. **(V)**

30 Introduction to Symbolic Logic (4). An introduction to the symbolism and methods of both propositional and quantificational logic, including evaluation of arguments by the techniques of natural deduction and semantic tableaux. Same as Social Science 30. **(V)**

31 Introduction to Inductive Logic (4). Philosophical questions concerning the foundations of scientific inference, e.g., the traditional problem of induction, the Goodman paradox, the concept of cause, Mill's method of inductive reasoning, probability calculus, different interpretations of probability, and their interaction in inductive reasoning. Same as Social Science 31. **(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. **(IV)**

UPPER-DIVISION

NOTE: These courses are grouped in four main subfields: History of Philosophy (110–117); Metaphysics and Epistemology (120–124); Value Theory (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.

101 Introduction to Metaphysics (4). A study of one or more of the problems of "first philosophy," e.g., substance, free will, causation, abstract entities, identity.

102 Introduction to the Theory of Knowledge (4). A study of one or more of the basic issues in epistemology, e.g., the role of perception in the acquisition of knowledge, the nature of evidence, the distinction between belief and knowledge, and the nature of truth and certainty.

103 Introduction to Moral Philosophy (4). A study of one or more of the problems of contemporary moral philosophy, e.g., the nature of justice, liberalism versus conservatism, happiness and its relation to virtue and right conduct, the objectivity of moral standards.

104 Introduction to Logic (4). Introduction to sentence logic, including truth tables and natural deduction; and to predicate logic, including semantics and natural deduction. Same as Social Science 104.

105A Elementary Set Theory (4). An introduction to the basic working vocabulary of mathematical reasoning. Topics include: sets, Boolean operations, ordered n-tuples, relations, functions, ordinal and cardinal numbers. Prerequisite: Philosophy 104 or an upper-division course in mathematics, or consent of instructor. Philosophy 105A and Mathematics 151 may not both be taken for credit. Same as Social Science 105A.

105B Metalogic (4). Introduction to formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Löewenheim-Skolem theorems. Prerequisites: Philosophy 105A or consent of instructor. Philosophy 105B and Mathematics 150 may not both be taken for credit. Same as Social Science 105B.

105C Undecidability and Incompleteness (4). Introduction to the formal theory of effective processes, including recursive functions, Turing machines, Church's thesis, and proofs of Göedel's incompleteness theorem for arithmetic, and Church's undecidability theorem for first-order logic. Prerequisite: Philosophy 105B or consent of instructor. Philosophy 105C and Mathematics 152 may not both be taken for credit. Same as Social Science 105C.

106 Topics in Logic (4). Selected topics in mathematical or philosophical logic. Prerequisite: Philosophy 105B or consent of instructor. May be repeated for credit as topics vary.

107 Effectively Computable Functions and Degrees (4). Aims to provide an introduction to recursive function theory, with special emphasis on the theory of the recursively enumerable sets of natural numbers and their "fine structure" under various notions of reducibility. Same as Social Science 107.

108 Topics in Probability, Induction, and Decision Theory (4). Selected topics in probability, induction, and decision theory. May be repeated for credit as topics vary.

109 Legal Reasoning, Argument, and Evidence (4). A comparison of philosophical investigations of reasoning, argument, and evidence, with the theory and practice of similar notions in the law. Prerequisite: Philosophy 30.

110 Topics in Ancient Philosophy (4). Selected topics from the writings of Plato and Aristotle, e.g., Aristotle's criticisms of Plato's metaphysics, ethics, or politics. May be taken for credit twice as topics vary.

111 Topics in Medieval Philosophy (4). Studies of some of the major issues of concern to Medieval philosophers, e.g., universals, the nature and existence of God, faith, and reason. May be taken for credit twice as topics vary.

112 Topics in Renaissance Philosophy (4). Studies of such authors as Bruno and Montaigne. May be taken for credit twice as topics vary.

113 Topics in Modern Philosophy (4). Focuses on the works of one or more of the central philosophical figures of the modern period (e.g., Descartes, Leibniz, Hobbes, Locke, Hume, Kant) or on the treatment of one or more central philosophical problems by a number of these figures. May be repeated for credit as topics vary.

114 Topics in Nineteenth-Century Philosophy (4). Studies of some of the major figures after Kant (e.g., Hegel, Nietzsche, Marx, Kierkegaard), especially in German idealism and social thought. May be repeated for credit as topics vary.

115 Topics in History of Analytic Philosophy(4). Review of one or more central theories or figures in the history of analytic philosophy. Emphasis is on the study of original sources, especially writings of Frege, Russell, Schlick, Carnap, and Quine. Topics include the nature of meaning and truth, the synthetic/analytic distinction, and scientific knowledge. May be repeated for credit as topics vary.

116 Topics in Continental Philosophy. Studies of some of the major figures (e.g., Husserl), movements (e.g., phenomenology, existentialism) in early twentieth-century continental European thought. May be repeated for credit as topics vary.

117 Topics in East Asian Philosophy (4). Selected topics in the philosophies of East Asia, e.g., Yoga, Buddhism, Vedanta, Confucianism, Taoism, and Shinto. Same as East Asian Languages and Literatures 117. May be repeated for credit as topics vary. **(VII-B)**

120 Topics in Metaphysics (4). Examines central philosophical questions concerning our own fundamental nature and that of the world around us (e.g., causation and necessity, determination, free will, personal identity, the mind-body problem). May be repeated for credit as topics vary.

121 Topics in the Theory of Knowledge (4). One or more topics in the theory of knowledge, e.g., the nature of rational justification, of perceptual knowledge, of a priori knowledge. May be repeated for credit as topics vary.

122 Topics in Philosophy of Mind (4). Selected topics involving the concept of mind, e.g., the relation between mind and body, the self, personal identity, consciousness, the unconscious. May be repeated for credit as topics vary.

123 Topics in Philosophy of Religion (4). Critical examination of concepts involved in the theological literature, e.g., the nature and existence of God, miracles, the problem of evil, divine command theories in ethics. May be repeated for credit as topics vary.

130 Topics in Moral Philosophy (4). Selected topics in ethics. May be repeated for credit as topics vary.

131 Applied Ethics. Application of moral theories and arguments to important problems facing contemporary society.

131A Applied Ethics (4). Topics may include capital punishment, world hunger, obligations to future generations, environmental ethics, animal rights, economic justice, sexual morality, affirmative action, racism and sexism, or legalization of drugs.

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.

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.

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. **(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. May be repeated for credit as topics vary.

133 Topics in Philosophy of Law (4). Selected topics concerning legal systems and the concept of law, e.g., the nature and purpose of law, the nature of authority, the relationship between law and morality, law and political-economic systems. May be repeated for credit as topics vary.

140 Topics in Philosophy of Science (4). Selected topics in contemporary philosophy of science, e.g., the status of theoretical entities, the confirmation of theories, the nature of theoretical entities. Philosophy 40 recommended as background. May be repeated for credit as topics vary. **(IV)**

141A Topics in Philosophy of Physics (4). Selected topics in the philosophy of physics, e.g., the interpretation of quantum mechanics, the nature of spacetime, the problem of quantum field theories. May be repeated for credit as topics vary. Same as Social Science 131A.

141B Geometry and Spacetime (4). An examination of issues concerning the mathematical and philosophical foundations of the special theory of relativity. Among topics discussed is the alleged conventionality of simultaneity. Same as Social Science 131B.

141C Foundations of Quantum Mechanics (4). An examination of the standard von Neumann-Dirac formulation of quantum mechanics. The quantum measurement problem is discussed along with several proposed solutions, including GRW, many-worlds, many-minds, and Bohm's theory. Same as Social Science 131C.

141D Probability and Determinism (4). An examination of a number of interrelated issues concerning determinism and probability in physics. Includes the senses in which Newtonian mechanics is and is not deterministic and a discussion of the probabilistic structure of quantum mechanics. Same as Social Science 131D.

142 Writing/Philosophy of Biology (4). Philosophy of biology, e.g., scientific method in biology, the structure of evolutionary theory, teleology, ethics, and evolution. Course work includes one 4,000-word and four 1,000-word papers. Prerequisites: satisfactory completion of the lower-division writing requirement; Philosophy 40 recommended as background. Same as Biological Sciences 142 and Social Science 132.

143 Topics in Philosophy of Psychology (4). Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience. May be repeated for credit as topics vary.

144 Topics in Philosophy of Social Science (4). Selected topics in the philosophy of the social sciences, e.g., is their goal to understand behavior or to predict and control it?; are they normative and the natural sciences not?; do they incorporate philosophical doctrines about language and mind? May be repeated for credit as topics vary.

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. May be repeated for credit as topics vary.

146 Topics in Philosophy of Logic (4). Selected topics in the philosophy of logic, e.g., the nature of logical truth and our knowledge of it, the status of propositions, definite descriptions, and existential presuppositions. May be repeated for credit as topics vary.

147A Introduction to Philosophy of Mathematics (4). Historical background (e.g., Kant), the three great schools at the turn of the century (logicism, formalism, intuitionism), the positivists and their critics (Carnap, Quine), contemporary views and problems (e.g., Quine, Benacerraf). Same as Social Science 134A.

147B Topics in Philosophy of Mathematics (4). Further historical or contemporary issues in the philosophy of mathematics. 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.

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. 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. May be repeated for credit as topics vary.

190 Special Topics in Philosophy (4). Lectures on selected topics to be given by regular faculty and visiting faculty. May be repeated for credit as topics vary.

199 Directed Special Studies (2 to 4). Independent study on a research topic supervised by a faculty member. May be repeated for credit as topics vary.

GRADUATE COURSES

200 Special Topics in Philosophy (4). Seminars on selected topics to be given by regular faculty and visiting faculty. May be repeated for credit as topics vary.

201 First-Year Seminar (4). Examination of some standard works in history of philosophy, value theory, metaphysics, or epistemology. Open to and strongly recommended for all first-year Philosophy graduate students.

205A Set Theory (4). The basic working vocabulary of mathematical reasoning. Topics include: sets, Boolean operations, ordered n-tuples, relations, functions, ordinal and cardinal numbers. Same as Social Science 205A.

205B Metalogic (4). Formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Loewenheim-Skolem theorems. Prerequisite: Philosophy 205A. Same as Social Science 205B.

205C Effective Processes (4). Formal theory of effective processes, including recursive function, Turing machines, Church's thesis, and proofs of Goedel's incompleteness theorem for arithmetics, and Church's undecidability for first-order logic. Prerequisite: Philosophy 205B. Same as Social Science 205C.

206 Topics in Logic (4). Same as Social Science 206. May be repeated for credit as topics vary.

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.

218 Topics in Contemporary Philosophy (4). May be repeated for credit as topics vary.

220 Topics in Metaphysics (4). May be repeated for credit as topics vary.

221 Topics in Epistemology (4). May be repeated for credit as topics vary.

222 Topics in Mind and Action (4). May be repeated for credit as topics vary.

230 Topics in Ethics (4). May be repeated for credit as topics vary.

232 Topics in Political and Social Philosophy (4). May be repeated for credit as topics vary.

234 Topics in Aesthetics (4). May be repeated for credit as topics vary.

240 Topics in Philosophy of Science (4). Same as Social Science 230. May be repeated for credit as topics vary.

241 Topics in Philosophy of Physics (4). Same as Social Science 231. May be repeated for credit as topics vary.

242 Topics in Philosophy of Biology (4). Same as Social Science 232. 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.

246 Topics in Philosophy of Logic (4). Same as Social Science 236. May be repeated for credit as topics vary.

247 Topics in Philosophy of Mathematics (4). Same as Social Science 237. May be repeated for credit as topics vary.

248A-B-C Continental Philosophy Workshop (0-0-4). A three-quarter long workshop, conceived as a reading group and developed with the input of all participants, where significant texts are discussed and analyzed in class. 248A-B: In-progress grading. 248C: Satisfactory/Unsatisfactory only.

249 Logic and Methodology Workshop (1 to 4). A two- or three-quarter long workshop on selected topics in logic and methodology. In-progress, Satisfactory/Unsatisfactory grading only. May be repeated as topics vary.

250 Topics in Existentialism and Phenomenology (4). May be repeated for credit as topics vary.

298 Independent Study (4 to 12). May be repeated for credit.

299 Directed Research (4 to 12). May be repeated for credit.

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 STUDIES

168 Humanities Instructional Building; (949) 824-8119
Lynn Mally, **Director**

Faculty

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, *Professor Emeritus of Russian* (eighteenth-century Russian theatre and literary theory, Pushkin, Chekhov, Kuzmin, Russian Symbolist theater, cabaret theatre, Russian literature and theater of the 1920s)

Victorina Lefebvre, Ph.D. Lomonosov Moscow State University, *Lecturer* (methods of teaching, comparative study of Western and Soviet culture, Russian language and literature)

Lynn Mally, Ph.D. University of California, Berkeley, *Director of the Program in Russian Studies and Associate Professor of History* (modern Russian and Soviet history)

Spanning both Europe and Asia, Russia is one of the world's dominant political entities. Its rich cultural traditions have enhanced world literature, theater, art, and dance. As the world's first socialist state, it became a major political rival of the United States after the Second World War. In the past decade, Russians have abandoned their socialist system and are now in the process of making a rocky transition to capitalism and a multi-party system. Although Russia lost sizeable amounts of territory in this transition, the Russian language now serves as the *lingua franca* throughout many areas formerly controlled by the Soviet Union.

While the demand for specialists in various sectors of government has eased, relationships between our countries at other levels of society are growing more active and business opportunities are exciting and rewarding. Other areas in which the need for Russian language competence is evident right now include trade, environmental protection, social services, law, medicine, and technology.

All students in Russian language courses are encouraged to take part in the 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*.

The Russian Studies minor is a multidisciplinary curriculum combining the Humanities, Social Sciences, and Social Ecology. It is designed to introduce students to the rich history and culture of Russia and provide them with the intellectual and linguistic tools necessary for sustained engagement with this area of the world.

Requirements for the Minor

Russian 1A-B-C, 2A-B-C, 50 (three different topics); 16 units of upper-division courses selected from the following: Russian 140, 150, 199, appropriate Comparative Literature courses, History 124A, 124B, 190 (when topics are related to Russia), Political Science 154F (cross-listed with Anthropology 136D), and 159C. (A maximum of 4 units may be chosen from the following courses devoted in part to Russian themes: History 126A, 126B, 126C, 158A, Political Science 154G, and Social Ecology E113.)

Residence Requirement for the Minor: At least four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

Courses in Russian

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.

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)**

140 Topics in Russian Literary Theory (4). Examines the work of individual theorists and schools of literary theory in the nineteenth and twentieth centuries. May be repeated for credit as topics vary. **(VII-B)**

150 Topics in Russian Literature (4) F. Examines major Russian writers and important themes in Russian literature from the eighteenth to the twentieth centuries. Taught in English translation. May be repeated for credit as topics vary. **(VII-B)**

151 Classics of Russian Literature (4). 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, Turgenev, 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 Soviet Russian Literature (4) S. Examination of novels and short stories by Russian writers of the Soviet period; topics may include examples of Socialist Realism, dissident and emigre literature, literature of the Thaw and Perestroika. Relevant social and political contexts are discussed. 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.

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.

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.

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.

199 Independent Study (1 to 4) F, W, S. Independent study under direct faculty supervision. Prerequisite: consent of instructor. May be taken two times for credit.

DEPARTMENT OF SPANISH AND PORTUGUESE

322 Humanities Hall; (949) 824-6901
Jacobo Sefamí, **Department Chair**

Faculty

Luis F. Avilés, Ph.D. Brown University, *Associate Professor of Spanish* (Golden Age literature and literary theory)
Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish* (Latin American and Chicano literatures)
Anne J. Cruz, Ph.D. Stanford University, *Professor Emerita of Spanish* (Golden Age Spanish and comparative literature)
Ana Paula Ferreira, Ph.D. New York University, *Associate Professor of Portuguese* (Portuguese, women's studies, and critical theory)
Lucía Guerra-Cunningham, Ph.D. University of Kansas, *Professor of Spanish* (Latin American literature, literary theory, and women's studies)
Ivette N. Hernández-Torres, Ph.D. Brown University, *Assistant Professor of Spanish* (colonial literature and Caribbean literature)
Juergen Kempff, Ph.D. University of California, Santa Barbara, *Lecturer and Language Curriculum Director* (theoretical and applied linguistics, Spanish as a foreign language, technology and instruction)
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 and Chicano/Latino Studies* (Latin American and Chicano literature, film studies, creative writing)
Gonzalo Navajas, Ph.D. University of California, Los Angeles, *Professor of Spanish* (eighteenth- through twentieth-century Spanish literature; film and visual arts; aesthetics and contemporary cultures)
Héctor Orjuela, Ph.D. University of Kansas, *Professor Emeritus of Spanish* (Latin American literature, poetry and essay)
Julian Palley, Ph.D. University of New Mexico, *Professor Emeritus of Spanish* (modern Spanish literature)
Jill Robbins, Ph.D. University of Kansas, *Associate Professor of Spanish* (contemporary 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, *Department Chair and Associate Professor of Spanish* (Latin American literature, contemporary poetry)
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 literatures and cultures.

The Spanish Placement Test is required for all students who want to enroll in any Spanish course through the Spanish 5 level. Sudents with more than two years of college-level course work in Spanish, or who graduated from a high school in a Spanish-speaking country, or who graduated from a Spanish Academy, must take a copy of their transcript to the Humanities Undergraduate Counseling Office (143 Humanities Instructional Building) in order to activate eligibility to enroll in the appropriate course.

Students who have already met the language breadth requirement with either SAT II scores, Advanced Placement Examinations, or the Foreign Language Exemption Examination for Spanish, and who plan to enroll in any Spanish course through the Spanish 5 level at UCI, are still required to take the Spanish Placement Test. Students cannot earn units or grade points at UCI in courses from which they have been exempted on the basis of Advanced Placement credit, even if placement results recommend enrollment in such a level.

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 introduces literary analysis. Further, a course in phonetics aims to perfect pronunciation and presents historical and dialect variants of Spanish. The introductory courses in literature, also to be taken 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 54–59.

School Requirements: See pages 203–204.

Departmental Requirements for the Major

Spanish 2C (or Spanish 5, for native speakers) or the equivalent is a prerequisite to Spanish 10A. Spanish 10A is a prerequisite to Spanish 10B and to major requirements. Spanish 10B may be taken concurrently with upper-division Spanish courses.

Students must choose one or more of the following emphases:

Literature and Culture: Spanish 10A-B; 100A, 100B, 100C, 100D, 100E; 110A, 110B, or 110C; 113A; and six upper-division courses in literature, two of which may be in culture, film, and/or creative writing. 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 100A-E series courses per quarter.

Linguistics: Spanish 15*; 100A or 100B; 100C or 100D; 100E; 107; 110A, 110B, or 110C; 113A; 113B; 187; 201, 202, or 205 (consent of instructor required for these graduate courses); Linguistics 3, 10, 20, 100; and either Spanish 199 or Linguistics 154, 164A, or 168A. NOTE: Students may double major in Spanish and Linguistics but may not apply more than two courses toward both majors.

Teaching Language and Culture: Spanish 10A-B; 15*; 100A or 100B; 100C or 100D; 100E; 105; 106A or 106B; 107; 110C; 113A; 113B; 114; 142; and one additional upper-division Spanish course.

* For non-native speakers only; semi-native and native speakers must substitute another upper-division course in either literature, culture, or linguistics for Spanish 15.

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. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Departmental Requirements for the Portuguese Minor

Prerequisite: Portuguese 1C or the equivalent. Requirements: Portuguese 120A-B-C and four courses from Portuguese 121 and 122.

Residence Requirement for the Minor: At least four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

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. For a listing of possible professions, please see http://www.humanities.uci.edu/spanish on the World Wide Web.

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 UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

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 two quarters and produce a publication for the *Hispanic Studies Series* published by Juan De La Cuesta. Past program participants have

included: Professor Elias J. Rivers (1990–91), State University of New York at Stonybrook, Spanish Golden Age literature; Alfonso Sastre (1991–92), Spanish playwright and intellectual; Professor Hernán Vidal (1992–93), University of Minnesota, theorist and scholar in Latin American literature and culture; Professor John Kronik (1993–94), Cornell University, modern Spanish literature; Professor José Agustín (1994–96), leading Mexican novelist and cultural critic; Professor Alan D. Deyermond (1997–98), Queen Mary and Westfield College, London, internationally known medievalist; and Professor Noé Jitrik (1999), leading critic in Latin American literature.

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 Master of Arts degree in Spanish is a two-year program of study designed to expose the beginning graduate student to all periods of peninsular, Latin American, and Chicano/Latino literature and culture. The degree is awarded upon the successful completion of course work and written and oral comprehensive examinations. A minimum of 11 courses must be completed with a letter grade; at least eight of these must be graduate seminars or proseminars. Required course work includes Spanish 239A, and two courses in linguistics (Spanish 201 and 204 are recommended). To help students prepare for their master's examination, the Department offers a sequence of panoramic courses in peninsular literature (Spanish 210, 214, 225) and in Latin American literature (Spanish 238A, B, C) during alternate years. Proficiency (defined as the equivalent of completing 2C) in a foreign language other than Spanish is required; it is recommended that master's students take Portuguese as their foreign language, although other languages are accepted. Students may choose a focus in literature, linguistics, or creative writing. Master's candidates must complete a minimum of three quarters of course work in the Department; the maximum time to complete the master's program is three years. Normally only students who are studying for the Ph.D. are admitted to the graduate program.

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.

DOCTOR OF PHILOSOPHY IN SPANISH

The Department of Spanish and Portuguese offers a Ph.D. degree in Spanish with a specialization in Spanish, Spanish-American, or Chicano/Latino literature and culture. The program integrates period and genre studies with work in literary and critical theory, linguistics, sociohistorical studies, and cultural studies. The Department seeks to professionalize its Ph.D. candidates not as narrow specialists but rather as scholars and critics acquainted with a range of fields that relate to and enhance their discipline. Graduate emphases in Critical Theory and in Feminist Studies are available; other areas of study (for example, film, comparative literature, history) may be designed with approval from the student's Ph.D. guidance committee. The Department has been traditionally committed to excellence in teaching, both in its own practice and in the formation of its graduates.

Language Requirements

In addition to Spanish and English, all doctoral candidates should have the necessary command of Portuguese to take Portuguese 243. An additional foreign language (with proficiency equivalent to the 2C level) is also required; this requirement may be satisfied by examination or course work. The selection of a second foreign language must be approved by the student's guidance committee and is based on the specific research interests and field of study of the candidate.

Course Requirements

A minimum of 24 courses beyond the B.A. or 13 beyond the M.A. are required: two courses in literary theory (including Spanish 239A) two courses in linguistics (one diachronic and one synchronic), one graduate course in Luso-Brazilian literature, and Spanish 292. Note that these requirements may include course work completed in the master's program; the remaining elective courses are selected with the approval of the student's guidance committee to prepare for the doctoral examination and the dissertation. Students are encouraged to take more than the minimum number of required courses.

A student who transfers into the doctoral program from elsewhere must take a minimum of 13 graduate courses at UCI, of which nine must be in the Department of Spanish and Portuguese (of these, six must be regularly scheduled graduate seminars or proseminars). With regard to students who enter the Ph.D. program with their master's degree from another institution, the Ph.D. guidance committee will determine the number of courses that will be accepted.

Teaching

The Department recognizes its responsibility to train all Ph.D. candidates as teachers and requires that all doctoral students with no prior teaching experience complete a minimum of three quarters of language teaching (Spanish 399). Moreover, all doctoral students are required to complete a teaching practicum by co-teaching an upper-division course with a professor and enrolling in Spanish 292 for a letter grade.

Comprehensive Examination

The Ph.D. student advances to candidacy by passing by majority vote the qualifying examination. The qualifying examination consists of:

1. An essay of 25–30 pages written on a topic related to the student's primary field of study. The essay should be presented as a publishable article for a professional journal with an original scholarly, critical, and theoretical component as well as a critical evaluation of relevant bibliography. The essay will be discussed during the oral examination. It will be circulated to the full committee two months prior to the date of the written examination.
2. A four-hour written examination on the student's major field of study that requires a cultural perspective of the total literary production of a given period with emphasis on one genre, topic, or problem. The definition of the major field of study is approved by the Ph.D. examination committee and the graduate director.
3. A three-hour written examination in the minor field.
4. A two-hour oral examination that includes discussion of the written examinations and the essay.

Dissertation

A dissertation topic is chosen by the candidate in consultation with the dissertation director and committee and normally falls within the major field covered by the qualifying examinations. The candidate presents a plan for the work to the dissertation committee which approves the proposal and a preliminary research outline. The student submits drafts of chapters to the dissertation director who corrects and approves the drafts and circulates them to other committee members for commentary. The defense of the dissertation occurs at an appropriate point of its development, certainly before its completion and during residency of the candidate, so that faculty input is maximized. The doctoral committee certifies the acceptance of a completed final dissertation with the signatures of individual members on the title page.

Courses in Portuguese

LOWER-DIVISION

1A-B-C Fundamentals of Portuguese (4-4-4) F, W, S. Basic grammar, conversation, and composition with an initial exposure to the varied cultures of the Portuguese-speaking world.

UPPER-DIVISION

120A-B-C Introduction to Portuguese and Brazilian Literature (4-4-4) F, W, S. General introduction to selected authors and works in relation to literary currents and to specific historical and cultural contexts. Taught in Portuguese. **120A:** Middle ages to eighteenth century. **120B:** Nineteenth century. **120C:** Twentieth century. Prerequisites: for 120A: Portuguese 1C or equivalent; for 120B: Portuguese 120A with a grade of C or higher; for 120C: Portuguese 120B with grade of C or higher. (120A: **VI**)

121 Topics in Luso-Brazilian Literature (4) F, W, S. In English. Contextualized study of a major author, current, or genre in Brazilian, Portuguese, and/or Lusophone African literature. Examples: Gender, Race, and Sexualities in Post-Colonial Lusophone Literatures; Women and Writing in Brazil and Portugal; The Short Story. May be repeated for credit as topics vary. **(VII-B)**

122 Topics in Luso-Afro-Brazilian Culture (4) F, W, S. In English. Diachronic or synchronic study of a topic in the cultures of Portuguese expression through the use of printed media, music, art, and films. Examples: Africa in Brazil; From Dictatorship to Revolution. May be repeated for credit as topics vary. **(VII-B)**

190 Individual Studies (4-4-4) F, W, S

GRADUATE

243 Seminar in 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 as topics vary.

290 Individual Study (4) F, W, S

Courses in Spanish

LOWER-DIVISION

1A-B-C Fundamentals of Spanish (5-5-5) 1A (F), 1B (W), 1C (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. Not open to native or semi-native speakers of Spanish; those students should take Spanish 5 instead. 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. Not open to native or semi-native speakers of Spanish; those students should take Spanish 5 instead. 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), 2B (W), 2C (S). Conversation, reading, and composition skills are developed using texts of literary and social interest. Emphasis on grammar review. Prerequisite: Spanish 1C or S1BC or equivalent. Not open to native or semi-native speakers of Spanish; those students should take Spanish 5 instead. 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 a Spanish 2A-B-C during academic year. Prerequisite for S2AB: Spanish 1C or three years of high school Spanish; for S2BC: Spanish S2AB or 2B or four years of high school Spanish. Not open to native or semi-native speakers of Spanish; those students should take Spanish 5 instead. 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 (native-like) oral proficiency in Spanish. **(VI)**

10A-B Advanced Composition (4-4) F, W, S. 10A: Compositions on a variety of themes and types of writing, motivated and prepared in the classroom and arranged in order of difficulty. Review of selected grammatical topics. Prerequisite: Spanish 2C or 5 or equivalent. **10B:** Includes introduction to literary analysis. Prerequisite: Spanish 10A. **(VII-B)**

15 Advanced Spanish Conversation (4) W, S. 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. Not open to native or semi-native speakers of Spanish. Prerequisite: Spanish 10B.

44 Hispanic Literatures for Nonmajors (4). 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. Studies of works representative of historical periods of Peninsular, Latin American, and Chicano/Latino literature. Students also are introduced to literary analysis and cultural critique. Prerequisite: 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 Latin American Literature: Pre-Hispanic to Nineteenth Century (4). (VII-B)

100D Introduction to Latin 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: Spanish10A; Linguistics 3 recommended.

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 10B or equivalent. Same as Education 140A.

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. Requires field work. Emphasis placed on training differences for native versus nonnative Spanish speakers. Prerequisite: Spanish 10B or equivalent. Same as Education 140B.

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 or equivalent.

110A Peninsular Civilization (4). Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. **(VII-B)**

110B Latin American Civilization (4). Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. **(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 10A or equivalent. **(VII-A)**

113A Spanish Phonetics (4). Introduction to basic notions of Spanish phonetics. Particular attention is paid to problems of pronunciation that arise in native and non-native speakers of Spanish due to interference between Spanish and English. Phonology (the system that underlies phonetics) and Spanish dialectology also included. Prerequisite: Spanish 10B 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. Prerequisite: Spanish 10B or equivalent; 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.

116 Medieval Spanish Literature (4). Medieval literature in Spain from ninth century to 1500. Works of lyric and epic poetry, prose fiction, and nonfiction. Substantial historical and cultural background explored. Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. **(VII-B)**

119 Textual Analysis and Interpretation (4). Focus on analysis and interpretation of literary texts, with emphasis on narrative, poetry, theater/performance, and visual media. Also introduces students to the major currents in theoretical thought, such as cultural studies, postmodernism, and others. Oral presentations and short essays are required. Taught in Spanish. Prerequisite: Spanish 10A.

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: two courses from Spanish 100A, 100B, 100C, 100D, or 100E. May be taken for credit three times as topics vary. **(VII-B)**

122 Eighteenth- and Nineteenth-Century Spanish Literature (4). The main literary and ideological trends in eighteenth- and nineteenth-century Spain, including the enlightenment, romanticism, realism, and naturalism. Prerequisite: Spanish 10A or equivalent. May be taken for credit three times as topics vary.

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 10A or equivalent; Spanish 10B recommended. May be taken for credit three times as topics vary.

130A Spanish-American Prose Fiction 1830–1920 (4). Development of the novel and short story from Romanticism through Modernism. Prerequisite: Spanish 10A or equivalent; Spanish 10B 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 10A or equivalent; Spanish 10B 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 10A or equivalent; Spanish 10B recommended. **(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 10A or equivalent; Spanish 10B recommended. May be repeated for credit as topics vary. **(VII-B)**

131B Latin-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 10A or equivalent; Spanish 10B recommended. May be repeated for credit as topics vary. **(VII-B)**

131C Latin-American Theatre (4). The twentieth-century Latin-American theatre in one or more countries. Structured around movements, chronological periods, or themes. Prerequisite: Spanish 10B. **(VII-B)**

139 Writing about Literature (4). Requires at least 4,000 words of assigned English composition based on Peninsular Spanish and/or Latin American texts in English translation. Several essays required. Prerequisites: satisfactory completion of the lower-division writing requirement and upper-division standing.

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 10A or equivalent; Spanish 10B highly recommended. **(VII-A)**

142 Chicano Culture (4). Current research and perspectives on different aspects of Chicano culture: political, economic, sociological, artistic, and folkloric. Prerequisite: Spanish 10A; Spanish 10B recommended. May be taken twice for credit as topics vary. **(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. **(VII-A)**

150 Latin-American Literature in Translation (4). Study of texts by modern and contemporary Latin American writers in translation. Special emphasis given to the different intersections of cultures. Taught in English. May be repeated for credit as topics vary. **(VII-B)**

160 Topics in Hispanic Film Studies (4). Study of Spanish, Latin-American, and/or U.S. Latino film. May be taken for credit three times as topics vary. 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 10A or equivalent. May be repeated for credit as topics vary.

185 Selected Topics in Spanish Literature (4). Selection of representative topics in Spanish literature. Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. **(VII-B)**

186 Selected Topics in Latin American Literature (4). Selection of representative topics in the history of Latin American literature. Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary.

187 Selected Topics in Spanish Linguistics (4). Major topics in Spanish linguistics. May be repeated for credit as topics vary.

199 Independent Study (1 to 4) F, W, S. Research paper required. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

GRADUATE

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).

218 The Enlightenment and Romanticism: Spanish Subparadigm (4) F. Enlightenment and romanticism in their European context. Emergence of modernity and its ramifications in Spain. Similarities, differences of these two movements. Works by Jovellanos, Moratín, Feijoo, Cadalso in relation to philosophical, aesthetic premises established by major thinkers, from Voltaire, Rousseau, to Goethe.

219 The Aesthetics of Representation in the Nineteenth Century (4) S. The work as a social document. The ideological and aesthetic proposals of realism and naturalism versus traditionalist view. The positivist controversy. The impact of liberalism and utopian vision in fiction. Works by Clarín, Galdós, Pardo Bazán, and Blasco Ibáñez.

220 Turn-of-the-Century Literature (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.

221 Spanish Literature and European Modernism (4) S. Study of the links of the Spanish literary production of the 1920s with the aesthetic and social premises prevalent in European Modernism. The Avant-garde. Surrealism. The elitist view of art. Works by Salinas, Guillén, Aleixandre, García Lorca, Pérez de Ayala, and Jarnés.

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 Post-War Literature: Art as Resistance (4) W. The literature of the period following the Spanish Civil War. The politics of repression and the emergence of art as resistance. The new social realism. Lukacs and Marxist aesthetics. Major authors: Cela, Blas de Otero, Sastre, and Juan Goytisolo.

224 Spanish Thought: The Discourse of Modernity (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, Savater, Trias, and others. 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, García Lorca, Muñoz, Molina, and others.

226 Aesthetics of Contemporary Spain: The Postmodern View (4) F. Literature within the postmodern context. High and low culture aesthetics. The explosion of antihierarchical concepts in the post-Franco period. Works by Muñoz Molina, Pérez Reverte, Rossetti, and Esther Tusquets.

227 Chicano/Latino Autobiography (4) S. A study of autobiographies authored by Latinos in North America from the sixteenth to the twentieth century. Focus on theories of ethnogenesis and difference.

231A History of Latin American Theatre (4) W. An overview of Latin American theater from pre-Hispanic theatrical forms to the present, emphasizing the relationships between cultural and political systems and theater, and the utilization of theater as a tool of self-legitimization for the exercise of cultural power.

231B Modern Latin American Theatre (4) S. History of theater in one country. Emphasis on theatrical discourses and their relationship with other forms of visual representation and arts in the conflicting processes of national identity or national self-definitions. May be taken for credit twice as topics vary.

231C Contemporary Latin American Theater (4) F. The impact of modernization as a cultural and political tool in Latin America, and its forms of expression as theatrical discourses. Emphasis on the inclusion and utilization of new forms of mise-en-scene, and the presence of postmodern forms.

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, and/or a specific literary trend. May be taken for credit twice as topics vary.

233 Spanish-American Novel (4). Focuses on different regions and/or periods within the twentieth century. Novels are examined in different contexts such as the problematics of representation, national identity, ethnicity, and notions of gender. May be repeated for credit as topics vary.

234 Spanish-American Poetry (4) S. Study of major movements and poetic trends, working with specific historical currents or analyzing a particular feature in several periods, i.e., baroque and neo-baroque, political committed poetry, the long poem. May be repeated for credit as topics vary.

235 Intellectual History in Latin America (4) F. Concentrates on different theories and hypotheses about cultural identity, national autonomy, ethnic diversity, colonialism, and postmodernism. May be repeated for credit as topics vary.

236 Selected Topics in Latin American Cultures (4) W. Focuses on one of the following areas: national cultures; specific author(s); theoretical discourses. May be repeated for credit as topics vary.

237 Selected Topics in Chicano Literature (4) S. Explores different topics in Chicano literature, from the Colonial period to the present, considering questions of migrancy, culture, language, gender, and identity as related to the people of Mexican ancestry residing in the United States. May be repeated for credit as topics vary.

238A Precolombian 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 Proseminar in Latin American Fiction: Nineteenth and Twentieth Centuries (4) W. An overview of fiction and metafiction in the context of dominant ideologies, minority discourses, and the notions of gender. Special emphasis is given to the different theories on the cultural specificity of Latin America.

238C Nineteenth- and Twentieth-Century Spanish American Poetry (4). Overview of major works and literary currents. Topics include: continental self-definition, assimilations and rejections of European movements, effects of historical events, nationalism, lyricism. Poets: Hernández, Darío, Martí, Lugones, Huidobro, Borges, Vallejo, Neruda, Mistral, Villaurrutia, Paz, Cardenal, Castellanos, and others.

239A Introduction to Literary Theory (4) F. Traces the development of Western literary critical principles from Aristotle to the twentieth century through selected readings of key figures in intellectual history (Aristotle, St. Augustine, Descartes, Kant, Hegel, Marx, Nietzsche, William James, and Freud).

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.

239C Special Topics in Theory (4). F, W, S. Focus on issues related to critical theory, theory of literature, cultural criticism and visual arts as they pertain specifically to Latin America, Spain, Portugal, and Brazil. Topics vary. Examples: Latin American cultural studies; theory, film, and media in postwar Spain.

241A-B-C Feminist Theory and Writing (4-4-4) F, W, S. Women's literary production is analyzed in the wider context of patriarchal constructions, social subordination, and feminist discourses. Focuses on writings from these five areas: Spain, Latin America, Chicana/Latina, Portugal, Brazil.

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.

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/English (4) F, W, S. Discussion of theory and practice of creative writing. Focus on critical analysis of participant's work in progress. Texts may be written in Spanish and/or English and may be written in poetry or prose format. May be repeated for credit as topics vary. Prerequisite: consent of graduate advisor.

290 Individual Study (4) F, W, S. May be repeated for credit as topics vary.

291 Directed Reading (4) F, W, S. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

292 Teaching Practicum (4) F, W, S. Satisfactory/Unsatisfactory only.

293 Creative Writers' Thesis Consultation (4) F, W, S. Students work with professor in the development of their creative writing project—either a novel, collection of short fiction, or collection of poetry. The goal of this writing in consultation is to conduct on-going critique of the work in progress. Prerequisite: consent of graduate advisor.

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.

GRADUATE PROGRAM IN VISUAL STUDIES

Anne Friedberg, **Graduate Advisor;** (949) 824-8596
David Joselit, **Graduate Advisor;** (949) 824-6635

Faculty

George Bauer, Ph.D. Princeton University, *Professor of Art History* (Renaissance and Baroque art and architecture)
Linda Freeman Bauer, Ph.D. Institute of Fine Arts, New York University, *Professor of Art History* (Renaissance and Baroque art)
Rhona Berenstein, Ph.D. University of California, Los Angeles, *Director of the Program in Film Studies and Associate Professor of Film Studies* (television studies, film genres, gender and popular culture, queer film and TV)
Anne Friedberg, Ph.D. New York University, *Associate Professor of Film Studies* (film history, film and media theory, theories of technology and visuality)
Anna Gonosová, Ph.D. Harvard University, *Associate Professor of Art History* (Byzantine and Medieval art and architecture)
James D. Herbert, Ph.D. Yale University, *Professor of Art History* (Modern European art, critical theory)
Judy C. Ho, Ph.D. Yale University, *Associate Professor of Art History* (Chinese art, critical theory)
David Joselit, Ph.D. Harvard University, *Associate Professor of Art History* (Modern and contemporary art, critical theory, gender studies)
Margaret M. Miles, Ph.D. Princeton University, *Associate Professor of Art History* (Greek and Roman art, archaeology)
Mark S. Poster, Ph.D. New York University, *Professor of History, Film Studies, and Information and Computer Science* (modern European intellectual history)
Fatimah Tobing Rony, Ph.D. Yale University, *Assistant Professor of Film Studies* (documentary film, race and representation, film history and criticism, film production)
Sally A. Stein, Ph.D. Yale University, *Associate Professor of Art History* (American art, photography and mass media, 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)
Judith A. Wilson, Ph.D. Yale University, *Assistant Professor of African-American Studies and Art History* (African-American visual culture, post-colonial art and theory, race representation in American visual culture)
Bert Winther-Tamaki, 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)

Affiliated Faculty

Stephen Barker, Ph.D. University of Arizona, *Professor of Drama* (theory, criticism, literature)
David Carroll, Ph.D. The Johns Hopkins University, *Department Chair and Professor of French* (literary theory and twentieth-century French literature)
Rey Chow, Ph.D. Stanford University, *Professor of Comparative Literature* (Chinese literature, Asian literatures and cultures, contemporary critical theory, film)
Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Assistant Professor of Women's Studies and Comparative Literature* (Asian American literature and culture, feminist theory, ethnic studies, gender)
Susan B. Klein, Ph.D. Cornell University, *Director of Religious Studies and Associate Professor of Japanese* (premodern and modern theatre and dance, Japanese religions, feminist critical theory)
Marcia Klotz, Ph.D. Stanford University, *Assistant Professor of German and Film Studies* (German film and cultural studies)
Catherine Lord, M.F.A. State University of New York, Buffalo (Visual Studies Workshop), *Professor of Studio Art* (critical theory, feminism, photography)
Julia Reinhard Lupton, Ph.D. Yale University, *Associate Professor of Comparative Literature and Director, Humanities Out There* (Renaissance literature, literature and psychology)

Liisa Malkki, Ph.D. Harvard University, *Associate Professor of Anthropology* (historical anthropology, nations and nationalism, refugees and exile, ethnicity and transnational identity; East and Central Africa)
William M. Maurer, Ph.D. Stanford University, *Assistant Professor of Anthropology* (anthropology of law, globalization, transnationalism, citizenship and nationalism, finance capital, identity, Caribbean)
Alejandro Morales, Ph.D. Rutgers University, *Professor of Spanish* (Latin American and Chicano literature, film studies, creative writing)
Gonzalo Navajas, Ph.D. University of California, Los Angeles, *Professor of Spanish* (eighteenth- through twentieth-century Spanish literature; film and visual arts; aesthetics and contemporary culture)
John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Director (Interim) of African-American Studies and Professor of English* (American literature, modern literature, critical theory, comparative literature)
Nancy Lee Ruyter, Ph.D. Claremont Graduate School, *Professor of Dance* (dance history, Spanish dance, choreography, and research methods)
Patrick Sinclair, Ph.D. Northwestern University, *Department Chair and Associate Professor of Classics* (Latin prose, lexicography)
Robyn Wiegman, Ph.D. University of Washington, *Director of the Program in Women's Studies and Associate Professor of Women's Studies, African-American Studies, and English* (American literature, women's studies, queer theory)
Jonathon M. Wiener, Ph.D. Harvard University, *Professor of History* (recent American history, theory and history)

The graduate program in Visual Studies, administered jointly by the faculties of the Department of Art History and of the Program in Film Studies, offers students the opportunity to pursue a doctorate in the cultural analysis of visual artifacts and experiences. Visual Studies synthesizes methodological insights from both component disciplines in order to examine the social practices of visual representation and visuality itself. The program leads to a Ph.D. degree in Visual Studies. While the program (in certain instances) grants an M.A. to students on route to their Ph.D., it admits only those students intending to complete their doctorate at UCI.

ADMISSION

The program is open to students applying with either a bachelor's or a master's degree, and applicants must meet the general requirements for admission to graduate study at UCI. A recent sample of academic writing—such as a representative undergraduate paper, or the master's thesis or a major research paper written at the master's level—should be submitted with the application packet.

The deadline for application is January 15, and the program accepts applicants for admission during the fall quarter only. Additional information is available from the Graduate Advisor for the Visual Studies program.

LANGUAGE REQUIREMENTS

All students are required to demonstrate a reading knowledge of at least one foreign language and are strongly encouraged to develop competence in a second. Students consult with the Graduate Advisor and/or their principal advisor(s) to determine the appropriate language to be tested, based on their interests and program of study. Advisors, moreover, may require the demonstration of reading knowledge in additional languages according to the scholarly demands of the student's specific field. All language requirements must be satisfied before students are advanced to candidacy for the Ph.D. degree.

COURSE REQUIREMENTS

Beyond the core series (Visual Studies 291, 292, 293), students admitted with a B.A. are required to complete an additional 11 courses for a total of 14 courses. Out of this total, at least 10 courses (including the core series) must be within the program in Visual Studies (i.e., bearing Visual Studies, Art History, or Film Studies course numbers) and at least two courses are to be from outside the Visual Studies discipline. In order to establish a level of expertise in one conventionally defined discipline, students entering with a B.A. must take (among their 10 courses noted above), at least three courses that have a strong component of art history *or* at least three courses that have a strong component of film studies. Courses bearing Art History or Film Studies numbers automatically satisfy this requirement for their respective fields. In addition, particular seminars offered as Visual Studies 295 may satisfy either the art history or film studies requirement; a list of qualifying seminars is available in the program office.

Students admitted with an M.A. must complete an additional five courses beyond the core series, for a total of eight courses. While students may accrue units both for University Teaching (Art History 399 or Film Studies 399) and Reading for the Qualifying Examination (Visual Studies 298), these do not count toward the required number of courses.

QUALIFYING EXAMINATION

By the end of the second year for students entering with a B.A., or the end of the first year for those entering with an M.A., students must reach agreement with one or more of the program's professors to serve as principal advisor(s). During the fall quarter of the following year—in most cases, the final quarter of standard course work—the student will work informally with the principal advisor(s) to establish a five-person committee consisting of the principal advisor(s), additional faculty members to bring the total of examiners up to four (at least three of these four must be members of the Visual Studies faculty), and a designated "outside" member who must be a member of the UCI faculty but cannot hold either a primary or joint appointment in Visual Studies, Art History, or Film Studies. Except in extraordinary circumstances (to be adjudicated by the program's Graduate Committee), students are required to include at least one member from Art History and one from Film Studies on their examination committee.

The student and principal advisor(s) define four areas to be examined by the faculty; no faculty member may supervise more than two of the four areas, and in no case may the "outside" member serve as a supervisor. The topics should combine historical breadth and some variety in media and special fields. Over the course of the following two quarters, students normally enroll in eight to twelve units per quarter of Reading for the Qualifying Examination (Visual Studies 298) during which time they prepare reading lists in close consultation with their principal advisor(s) and area supervisors, and complete the reading of those lists. The examination takes place near the end of those two quarters of study, normatively at the end of the academic year.

The first part of the examination consists of a written component, in which the student is called upon to respond to questions posed in three of the selected topics. The student's written responses are circulated to all committee members. An oral examination follows, normally within two weeks, and consists both of a set of questions posed orally about the remaining unexamined topic, and of questions raised by the student's written responses to the initial three topics. Based on the student's written and oral performance, the committee will determine whether the student has successfully passed the examination; if so (and provided all language requirements have been satisfied), the student is then advanced to candidacy for the Ph.D. degree. If the committee is not satisfied with the student's performance, it may also decide to reexamine the student on one or more topics after a specific interval. Except in extraordinary circumstances, no student will be given more than two chances to pass any given section of the examination.

DISSERTATION

Within six months of advancement to candidacy, each student must submit a prospectus that defines the scope, approach, and rationale for a proposed dissertation. The student and the principal advisor(s) consult to determine the composition of a doctoral committee of three members including the principal advisor(s), which then must unanimously approve the prospectus before the student proceeds with the dissertation. The doctoral committee, on the basis of the candidate's past academic performance and proposed dissertation topic, may require additional course work or other forms of preparation for the dissertation. The doctoral committee, under the direction of the principal advisor(s), supervises the student's research program and ultimately approves the dissertation. The normative time for completion of the Ph.D. program is five to six years.

Graduate Courses in Visual Studies

Additional graduate courses satisfying the requirements of the Ph.D. program in Visual Studies are listed in the Department of Art History and the Program in Film Studies sections. Graduate students may also enroll concurrently in any upper-division lecture class with the approval of the instructor.

291 Theories of Vision and Visuality (4). Introductory seminar surveys the key theories of vision and visuality. Examines the theoretical texts that have, over the past several decades, enabled the emergence of the hybrid discipline of Visual Studies and addresses the recent polemics written in support of and opposition to this new disciplinary practice.

292 Visual Studies and Historiography (4). History of art history and film studies to 1980. Examines the ways in which the visual has been constructed and places these constructions in their institutional and cultural contexts. Examines historiographic questions by interrogating the evidentiary power of visual artifacts.

293 Topics in Visual Studies (4). The exploration of a special topic in Visual Studies. Seminar is designed to demonstrate the range of application and methodologies that can be practiced in the study of visual artifacts and experiences. May be repeated for credit as topics vary.

295 Graduate Seminar in Visual Studies (4). May be repeated for credit as topics vary.

296 Directed Reading (4). Directed reading on a specific topic agreed upon by student and instructor. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

298 Reading for the Comprehensive Examination (4 to 12). Directed reading in preparation for the qualifying examination. Satisfactory/ Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

299 Dissertation Research (4 to 12). Research and writing of the dissertation. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

398 Teaching of Visual Studies (2). Readings, lectures, and practical training designed to prepare graduate students to teach in the field of Visual Studies. Corequisite: Art History 399 or Film Studies 399.

INTERDISCIPLINARY PROGRAM IN WOMEN'S STUDIES

352 Murray Krieger Hall; (949) 824-4234
Robyn Wiegman, **Director**

Core Faculty

Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Assistant Professor of Women's Studies and Comparative Literature* (Asian American literature and culture, feminist theory, ethnic studies, gender)

Nancy A. Naples, Ph.D. City University of New York, *Associate Professor of Sociology and Women's Studies* (women's political consciousness and activism, feminist theories of the state, women and poverty, sexual violence against women, feminist ethnography)

Elora Shehabuddin, B.A. Harvard University, *Acting Assistant Professor of Women's Studies and Political Science* (political economy of gender, development, gender and Islam, religion in politics and society, history and politics in South Asia)

Robyn Wiegman, Ph.D. University of Washington, *Director of the Program in Women's Studies and Associate Professor of Women's Studies, African-American Studies, and English* (feminist theory, sexuality studies, American cultural studies, race studies)

Affiliated Faculty

Joan Ariel, M.A. San Francisco State University, M.L.S. University of California, Berkeley, *Lecturer in Women's Studies and Women's Studies Librarian*

Lindon W. Barrett, Ph.D. University of Pennsylvania, *Associate Professor of English*

Rhona Berenstein, Ph.D. University of California, Los Angeles, *Director of the Program in Film Studies and Associate Professor of Film Studies*

Victoria Bernal, Ph.D. Northwestern University, *Associate Professor of Anthropology*

Ellen Broidy, Ph.D. University of California, Irvine, *Lecturer in Women's Studies and Librarian*

Kitty C. Calavita, Ph.D. University of Delaware, *Professor of Social Ecology*

Teresa Caldeira, Ph.D. University of California, Berkeley, *Associate Professor of Anthropology*

Francesca M. Cancian, Ph.D. Harvard University, *Professor of Sociology*

Chungmoo Choi, Ph.D. Indiana University, *Director of the Emphasis in Critical Theory and Associate Professor of Korean Culture*

Hector L. Delgado, Ph.D. University of Michigan, *Assistant Professor of Chicano/Latino Studies and Sociology*

Alice Fahs, Ph.D. New York University, *Associate Professor of History*

Ana Paula Ferreira, Ph.D. New York University, *Associate Professor of Portuguese*

Thelma Foote, Ph.D. Harvard University, *Associate Professor of History and African-American Studies*

Jeff Garcilazo, Ph.D. University of California, Santa Barbara, *Assistant Professor of Chicano/Latino Studies and History*

Elizabeth Guthrie, Ph.D. University of Illinois, *Director of the French Language Program and Lecturer in French*

Renée Riese Hubert, Ph.D. Columbia University, *Professor Emerita of French and Comparative Literature*

Helen Ingram, Ph.D. Columbia University, *Professor of Social Ecology and Political Science, and Drew, Chace and Erin Warmington Chair in the Social Ecology of Peace and International Cooperation*

Valerie Jenness, Ph.D. University of California, Santa Barbara, *Associate Professor of Social Ecology and Sociology*

David Joselit, Ph.D. Harvard University, *Associate Professor of Art History*

Ketu Katrak, Ph.D. Bryn Mawr College, *Director and Professor of Asian American Studies and Professor of English and Comparative Literature*

Susan B. Klein, Ph.D. Cornell University, *Director of Religious Studies and Associate Professor of Japanese*

Marcia Klotz, Ph.D. Stanford University, *Assistant Professor of German and Film Studies*

Karen R. Lawrence, Ph.D. Columbia University, *Dean of the School of Humanities and Professor of English*

Catherine Lord, M.F.A. State University of New York, Buffalo (Visual Studies Workshop), *Professor of Studio Art*
Liisa Malkki, Ph.D. Harvard University, *Associate Professor of Anthropology*
William M. Maurer, Ph.D. Stanford University, *Assistant Professor of Anthropology*
Glen Mimura, M.A. University of California, Santa Cruz, *Acting Assistant Professor of Asian American Studies*
Jane O. Newman, Ph.D. Princeton University, *Professor of Comparative Literature*
Carrie J. Noland, Ph.D. Harvard University, *Associate Professor of French*
Margot Norris, Ph.D. State University of New York, Buffalo, *Department Chair and Professor of English and Comparative Literature*
Leslie W. Rabine, Ph.D. Stanford University, *Associate Dean of Humanities Graduate Study and Professor of French*
Jens Rieckmann, Ph.D. Harvard University, *Department Chair and Professor of German*
Jill Robbins, Ph.D. University of Kansas, *Associate Professor of Spanish*
Belinda Robnett, Ph.D. University of Michigan, *Associate Professor of Sociology*
Judy B. Rosener, Ph.D. Claremont Graduate School, *Senior Lecturer in Management and Social Ecology*
Connie Samaras, M.F.A. Eastern Michigan University, *Associate Professor of Studio Art*
Gabriele Schwab, Ph.D. University of Konstanz, *Director of the Critical Theory Institute and Professor of English and Comparative Literature*
Patrick Sinclair, Ph.D. Northwestern University, *Department Chair of Classics and Associate Professor of Classics*
John H. Smith, Ph.D. Princeton University, *Professor of German*
Sally Stein, Ph.D. Yale University, *Associate Professor of Art History*
Ulrike Strasser, Ph.D. University of Minnesota, *Assistant Professor of History*
Katherine Tate, Ph.D. University of Michigan, *Associate Professor of Political Science*
Heidi Tinsman, Ph.D. Yale University, *Assistant Professor of History*
Ann J. Van Sant, Ph.D. University of California, Berkeley, *Associate Professor of English*
Ann Walthall, Ph.D. University of Chicago, *Professor of History and of East Asian Languages and Literatures*
Judith A. Wilson, Ph.D. Yale University, *Assistant Professor of African-American Studies and Art History*
Hu Ying, Ph.D. Princeton University, *Assistant Professor of Chinese*

UCI's Program in Women's Studies is dedicated to the study of women, gender, and sexuality in their complex intersection with race, ethnicity, class, and nationality. The Program's goal is to foster both critical and creative analysis of the various disciplinary perspectives—historical, political, economic, representational, technological, and scientific—that have (or have not) constituted women, gender, and sexuality as objects of study. By emphasizing a rigorous interdisciplinary perspective in their teaching and research, the Women's Studies faculty seek to produce new knowledge about the social meanings of gender, race, class, and sexuality, and to equip students with a range of analytical and methodological skills.

The field of women's studies has developed at a phenomenal rate from a handful of student-initiated courses in the early 1970s to more than 600 programs in colleges and universities across the United States offering degrees at the B.A., M.A., and Ph.D. levels. UCI's Program in Women's Studies 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.

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 UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. In addition, the Women's Studies Office provides more specialized career counseling and information on graduate programs in Women's Studies and related fields.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN WOMEN'S STUDIES

University Requirements: See pages 54–59.

School Requirements: See pages 203–204.

Humanities Core Course substitution for transfer Women's Studies majors: Four semester courses or six quarter courses equivalent to the following UCI course work: Writing 39B and 39C; a three-quarter Humanistic Inquiry sequence; and one additional lower-division Humanistic Inquiry course. No Women's Studies courses may count toward the Core Course substitution.

Requirements for the Major

A. Three introductory core courses (Women's Studies 50A, plus two selected from 50B, 50C, 60A, 60B, 60C.).

B. Three advanced core courses (Women's Studies 140, 159 or 160, 197).

C. Two courses selected from Women's Studies 161, 162, 163, or 164.

D. Two electives selected from Women's Studies 139, 150, 155, 160, 161, 162, 163, 164.

E. Three additional courses selected from Women's Studies 170–188.

Residence Requirement for the Major: A minimum of five upper-division courses required for the major must be completed successfully at UCI.

Requirements for the Minor

Completion of seven courses including: three lower-division courses selected from Women's Studies 50A, 50B, 50C, 60A, 60B, 60C; two courses selected from Women's Studies 139, 140, 150, 155, 160, 161, 162, 163, 164; and two courses selected from Women's Studies 170–188.

Residence Requirement for the Minor: A minimum of four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

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, East Asian Languages and Literatures, English and Comparative Literature, French and Italian, German, History, Sociology, Spanish and Portuguese: the program in Visual Studies; and the M.F.A. programs in 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 and affiliate faculty. There are no requirements concerning qualifying examinations or theses for M.F.A. students.

Courses in Women's Studies

LOWER-DIVISION

50A Gender and Feminism in Everyday Life (4) F. What is gender? Why does studying it matter? Explores how feminism has understood not only gender as a category of social analysis, but how gender structures personal identities, family, citizenship, work and leisure, social policy, sexuality, and language. **(IV, VII-A)**

50B Reproducing and Resisting Inequality (4) W. From bedroom to boardroom to voting booth to international division of labor, how are societal institutions and politics "gendered"? Examines relationships of gender, race, ethnicity, class, and region in sexual and reproductive experiences, households, education, work, and politics, including community activism. **(IV, VII-A)**

50C Gender and Popular Culture (4) S. An investigation of gender, race, and sexuality in film, TV, video, music, and advertising, with attention to the ways that popular culture shapes understandings of technology, national identities, leisure and work, historical memory, international communication, and multicultural representation. **(IV, VII-A)**

60A Gender and Science (4). Examines science from a variety of feminist viewpoints in order to explore how science influences everyday life. Special attention given to the way that science poses questions and pursues answers. Is there such a thing as a "neutral" or gender-free science? **(III)**

60B Gender and Law (4). Introduction to the relationship between gender, race, and the law. Critical thinking about how law defines citizenship, political representation, and democracy, focusing on the history of legal reform undertaken in the name of women as a social group. **(III)**

60C Gender and Religion (4). Introduces the topic of religion in a feminist context by performing cross-cultural exploration of gender, authority, and faith in various traditions. Study includes (but is not limited to) writings of contemporary Jewish, Christian, and Muslim feminists. **(III)**

UPPER-DIVISION

139 Topics in Gender Studies (4). Various topics in gender studies. Includes issues of gender, culture, race and class, including issues of sexualities and social justice. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. **(VII-A)**

140 Feminist Theory (4). Introduction to historical traditions in theory and various conceptual frameworks informing scholarship in Women's Studies. Concepts include (but are not limited to) identity, representation, political economy. Prerequisite: satisfactory completion of the lower-division writing requirement.

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.

159 Producing Feminist Knowledge (4). Explores alternative ways that feminist scholars frame research questions, conduct research or creative activity. Examines challenges that feminist scholarship poses to the academy and the challenges the academy poses to feminist scholars. Discusses limits and possibilities for feminist activist research and key methodological debates.

160 Gender and the Politics of Information (4) W. Investigates from feminist perspectives the challenges inherent in the "information age" and its embedded gender and political dimensions. Examines the increasingly complex identification, evaluation, and application of information from traditional library sources to the new global information technologies ranging from e-mail to multimedia websites. 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 Race and Gender (4). Examines the roles and intersection of racism, sexism, and heterosexism in U.S. culture and society. Through history and literature, explores the processes of immigration, colonization (of identity, language, and the body), and cultural interaction. Prerequisites: Women's Studies 50A, 50B, or 50C. May be taken for credit three times as topics vary. **(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)**

164 Political Economy of Gender (4). How international and domestic politics and economic processes shape women's lives in different parts of the world. Considers gender and the politics of labor, including international and domestic divisions of labor, colonialism, and resistance to colonial processes. Prerequisite: Women's Studies 50A, 50B, or 50C.

170 Gender, Feminism, Literature, and Language (4). Topics cover issues in language and literature which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

171 Gender, Feminism, and History (4). Topics cover issues in history which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

173 Gender, Feminism, and Philosophy (4). Topics cover issues in philosophy which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

174 Gender, Feminism, and the Arts (4). Topics cover issues in the arts which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

180 Gender, Feminism, and Anthropology (4). Topics cover issues which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

181 Gender, Feminism, and Cognitive Psychology (4). Topics cover issues in cognitive psychology which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

182 Gender, Feminism, and Economics (4). Topics cover issues in economics which relate to women and gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

183 Gender, Feminism, and Sociology (4). Topics cover issues in sociology which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

184 Gender, Feminism, and Political Science (4). Topics cover issues in political science which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

185 Gender, Feminism, and Social Sciences (4). Topics cover issues in social sciences which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

187 Gender, Feminism, and Social Ecology (4). Topics cover issues in social ecology which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

188 Gender, Feminism, and Science (4). Topics cover issues in science which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

197 Senior Seminar in Women's Studies (4) S. Students read advanced scholarship in Women's Studies and complete a major seminar paper. Prerequisite: Women's Studies 139. **(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 Feminist Knowledge and Social Change (4) F, W, S. An exploration of contemporary feminist debates about Women's Studies as an academic entity, interdisciplinary field, and political practice. May be taken for credit twice.

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. May be taken twice for credit as topics vary.

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.

210A Graduate Feminist Theory (4) F, W, S. In-depth introduction to various theoretical frameworks that have and continue to inform scholarship in Women's Studies including (but not limited to) identity, representation, and political economy.

260A Advanced Seminar in Women's Studies (4) F, W, S. Covers various areas of research within Women's Studies as an interdisciplinary field. Recommended for advanced graduate students.

290 Directed Research (4 to 12) F, W, S. Directed graduate study/research in Women's Studies. May be taken for credit for a total of 24 units.

399 University Teaching (4). Limited to Teaching Assistants. Must be admitted to the graduate emphasis in Feminist Studies. Satisfactory/Unsatisfactory only. May be taken for credit six times.

DEPARTMENT OF INFORMATION AND COMPUTER SCIENCE

Michael J. Pazzani, **Chair**

444 Computer Science
Undergraduate Counseling: (949) 824-5156
Graduate Counseling: (949) 824-2277
World Wide Web: http://www.ics.uci.edu/

Faculty

Mark S. Ackerman, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Information and Computer Science* (computer-supported cooperative work, information retrieval, sociology of computing, human-computer interaction)

Pierre Baldi, Ph.D. California Institute of Technology, *Associate Professor of Information and Computer Science and of Biological Chemistry* (bioinformatics, machine learning)

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)

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, *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, *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, *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)

John H. Gennari, Ph.D. University of California, Irvine, *Assistant Adjunct Professor of Information and Computer Science* (biomedical informatics, knowledge-based systems, software reuse)

Richard H. Granger, Ph.D. Yale University, *Professor of Information and Computer Science and of Cognitive Sciences* (computational and cognitive neuroscience)

Rajesh K. Gupta, Ph.D. Stanford University, *Associate Professor of Information and Computer Science* (system-level design and CAD for embedded and portable systems, VLSI design, computer systems architecture and organization)

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)

Sandra S. Irani, Ph.D. University of California, Berkeley, *Associate 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* (machine learning, genomic analysis)

John Leslie King, Ph.D. University of California, Irvine, *Professor of Information and Computer Science* (economics of computing; policies for computer management and use in organizations; public policy and social aspects of computer use)

Richard H. Lathrop, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Information and Computer Science* (modeling structure and function, machine learning, intelligent systems and molecular biology, protein structure/function prediction)

George S. Lueker, Ph.D. Princeton University, *Professor of Information and Computer Science* (computational complexity; probabilistic analysis of algorithms; data structures)

Sharad Mehrotra, Ph.D. University of Texas at Austin, *Assistant Professor of Computer Science* (multimedia information systems, multidimensional databases, uncertainty processing in databases, data structures, information retrieval, distributed databases, workflow automation)

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)

Renato Pajarola, D.Sc. Techn. Swiss Federal Institute of Technology (ETH), Zurich, *Assistant Professor of Information and Computer Science* (computer graphics and vision, computational geometry, spatial access structures, object-oriented programming)

Michael J. Pazzani, Ph.D. University of California, Los Angeles, *Department Chair and Professor of Information and Computer Science and Professor of Cognitive Sciences* (human and machine learning, natural language understanding, cognitive science)

Wanda Pratt, Ph.D. Stanford University, *Assistant Professor of Information and Computer Science* (knowledge-based systems, information organization, interfaces, evaluation, integration of multiple sources, knowledge-based reuse, information-gathering agents)

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)

David S. Rosenblum, Ph.D. Stanford University, *Associate Professor of Information and Computer Science* (software engineering; software testing; formal specification of software systems; software system evaluation, distributed object technology)

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)

Padhraic Smyth, Ph.D. California Institute of Technology, *Associate 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 Emeritus of Information and Computer Science* (statistical pattern recognition, automated analysis of large data sets, applications of probability and statistics to problems in artificial intelligence)

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, *Director of the Institute for Software Research and Professor of Information and Computer Science* (software engineering, user interfaces, environments, team support)

Gene Tsudik, Ph.D. University of Southern California, *Associate Professor of Information and Computer Science* (security and cryptography, networks and operating systems)

Andre van der Hoek, Ph.D. University of Colorado, Boulder, *Assistant Professor of Information and Computer Science* (software engineering)

Alexander V. Veidenbaum, Ph.D. University of Illinois at Urbana-Champaign, *Associate Professor of Computer Science* (computer architecture, interconnection networks, compilers, embedded systems)

Nalini Venkatasubramanian, Ph.D. University of Illinois at Urbana-Champaign, *Assistant Professor of Computer Science* (parallel and distributed systems, multimedia servers and applications, internetworking, high-performance architectures, resource management)

Lecturers

Stephen Franklin, Ph.D. University of Chicago, *Lecturer in Information and Computer Science* (computer-based educational technology, computer graphics, teaching of programming)

Daniel Frost, Ph.D. University of California, Irvine, *Lecturer in Information and Computer Science* (artificial intelligence, software engineering, computer graphics, Windows NT programming)

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)

Affiliated Faculty

Nader Bagherzadeh, Ph.D. University of Texas at Austin, *Department Chair and Professor of Electrical and Computer Engineering and Professor of Information and Computer Science* (parallel processing, distributed computing, computer architecture, neural networks)

Christopher Dobrian, Ph.D. University of California, San Diego, *Assistant Professor of Music and of Information and Computer Science* (electronic music, composition)

Michael D'Zmura, Ph.D. University of Rochester, *Director of the Virtual Reality Laboratory and Professor of Cognitive Sciences and of Information and Computer Science* (cognitive science, virtual reality)

Vijay Gurbaxani, Ph.D. University of Rochester, *Professor of Management and of Information and Computer Science* (economics of information systems management, impact of information technology on organization and market structure)

Donald Hoffman, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences and of Information and Computer Science* (human and machine vision; cognitive science; artificial intelligence)

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)

Kenneth L. Kraemer, Ph.D. University of Southern California, *Director of the Center for Research on Information Technology and Organizations, Professor of Management and of Information and Computer Science, and Taco Bell Chair in Information Technology Management* (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, *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)

Kwei-Jay Lin, Ph.D. University of Maryland, *Professor of Electrical and Computer Engineering and of Information and Computer Science* (real-time systems, distributed systems, object-oriented databases, scheduling theory, computer networks)

Gary S. Lynch, Ph.D. Princeton University, *Professor of Psychiatry and Human Behavior, Information and Computer Science, and Cognitive Sciences* (learning and memory, synaptic change, computational neuroscience)

Robert Nideffer, Ph.D. University of California, Santa Barbara, *Assistant Professor of Studio Art and of Information and Computer Science* (electronic intermedia, interface theory and design, technology and culture, contemporary social theory)

Mark S. Poster, Ph.D. New York University, *Professor of History, Film Studies, and Information and Computer Science* (modern European intellectual history)

Phillip C.-Y. Sheu, Ph.D. University of California, Berkeley, *Professor of Electrical and Computer Engineering and of Information and Computer Science* (database systems, multimedia information management, simulation, object-oriented systems)

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)

Alladi Venkatesh, Ph.D. Syracuse University, *Professor of Management and of Information and Computer Science* (market segmentation, sociology of consumption, marketing theory, and macro-marketing)

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 a Hewlett Packard SPP2000 parallel computer, Sun SPARC servers, a graduate student laboratory with DEC Alpha workstations, and various peripherals. Commercial dial-up services and 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. Pentium PCs and Power Macintoshes also are available via laboratories open 24 hours a day. Additional information may be obtained by calling OAC at (949) 824-6116; e-mail: oac@uci.edu; World Wide Web: http://www.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, 70 Macintoshes, 80 Pentium and Pentium Pro PCs, and some 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 51).

CAREERS FOR THE ICS MAJOR

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).

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.

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. Some Engineering courses can count toward intermediate-level and project course requirements for the ICS major. See the **upper-division** requirements for details.

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 Fundamental Data Structures (ICS 22 and 23) as far as their interests require and their programs permit.

The ICS Student Affairs Office is staffed by professional academic counselors and peer advisors. These individuals are available to assist students with program planning, questions on University and 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.

ADMISSIONS

Freshmen

In the event the major in ICS receives more qualified applicants than can be accommodated, applicants may be subject to screening beyond minimum University of California admissions requirements. There is a limit on the number of applicants admitted to the major. See page 41.

Transfer Student Policy

Students transferring to UCI must satisfy the following requirements:

1. Completion of one year of college mathematics. Courses equivalent to Mathematics 6A-B-C (Discrete Mathematics) are preferred as this facilitates scheduling after transfer to UCI. If not available, students should take first-year calculus. A semester of pre-calculus and a semester of calculus may not be used to satisfy this requirement.
2. Completion of one year of computer science courses. The course work must contain one UC-transferable programming course involving concepts such as those found in C++, Java, Eiffel, or another object-oriented, high-level language. Programming-only courses in Basic, Fortran, Cobal, Pascal, and C are not acceptable. It is strongly recommended that students select UC-transferable courses that do not focus strictly on learning a programming language but rather focus on topics such as object-oriented design, data structures, algorithms, and computer architecture, if such courses are available.

   Additional courses beyond the programming course required for admission must be taken to fulfill the year-long lower-division degree requirement. It is strongly recommended that transfer students enter UCI with knowledge of Java since it is used in the lower-division computer science requirement and serves as a foundation for upper-division programming-related courses.

There is a limit on the number of applicants admitted to the major.

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 54–59.

Information and Computer Science Major Requirements

Lower-division (some or all of these are prerequisites for required upper-division ICS courses):

A. ICS 6A or Mathematics 6A, Mathematics 6B, Mathematics 6C or 3A, Mathematics 2A-B-C.

B. ICS 21, 22, 23, 51, 52.

Upper-division:

A. ICS 121, 131, 141, 142, 143, 151, 152, 161, 171.

B. One intermediate course in each of two areas, selected from ICS 102; 122, 123; 132; 144, 148; ICS 153, Engineering ECE143, ECE151; ICS 162, 163, 164; ICS 172, 173, Engineering ECE136; Engineering ECE104 or ICS 186; ICS184.

C. Three project courses selected from ICS 105, 125, 126A-B, 127, 135, 145A, 145B, 155A, 155B, 156, 165, 175A, 175B, Engineering ECE151L. NOTE: ICS 127 may not be used to satisfy any part of the project course requirement in conjunction with ICS 126A-B.

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); 114A, 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 must be taken for a letter grade and may be used to satisfy upper-division requirements for the major. Courses may also be used to satisfy requirements of more than one specialization, subject to the following limitation: 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, 172-179.

Computer Systems: four courses selected from ICS 123, 144-149, 153-159.

Implementation and Analysis of Algorithms: two courses selected from ICS 163, 164, 165; two courses* selected from ICS 125, 145A, 145B, 156, 175A, 175B.

Information Systems: three courses selected from ICS 102, 105, 125, 132, 135; one course* selected from ICS 123, 137, 153, 175B, 184.

Networks and Distributed Systems: four courses selected from ICS 123, 145B*, 148, 153, 156*.

Software Systems: two courses selected from ICS 102, 105, 122, 123; two software project courses, either ICS 125 and 127* or 126A-B.

Requirements for the Minor

ICS 21, 22, 23; ICS 6A or Mathematics 6A; ICS 51 or 52; two upper-division ICS courses from ICS 100–179, excluding ICS 139.

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 research (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.

CAMPUSWIDE HONORS PROGRAM

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; telephone (949) 824-5461; e-mail: honors@uci.edu; World Wide Web: http://www.honors.uci.edu/.

EDUCATION ABROAD PROGRAM

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. Additional information is available in the Center for International Education section.

Graduate Program

The Department offers graduate programs leading to the M.S. and Ph.D. degrees in Information and Computer Science. Enrollments in the M.S. program are being limited to those students with an undergraduate degree in computer science or a closely related field.

Both M.S. and Ph.D. students may work toward a basic degree, or complete one of the following concentrations: Algorithms and Data Structures (Theory); Artificial Intelligence (AI); Computer Systems and Networks (CSN); Computer Systems Design (CSD); Computing, Organizations, Policy, and Society (CORPS); Informatics in Biology and Medicine (IBaM); Information Access and Management (IAM); Software (SW).

Two additional concentrations are available to M.S. students—Embedded Systems and Knowledge Discovery in Data. In addition, the Department is actively developing a program in the area of computational biology.

ADMISSION

Applicants will be evaluated on the basis of their prior academic record. Applicants for the M.S. degree are expected to have a bachelor's degree in computer science or a related field. Those who do not have an undergraduate degree in computer science may take the Computer Science Advanced GRE test and must score in the top 80 percent to demonstrate sufficient background in the field. Ph.D. applicants will be evaluated in their potential for creative research and teaching in Information and Computer Science.

Applicants are expected to have (1) skills in computer programming at least equivalent to those obtained in college-level courses in programming and language development; (2) skills in mathematics equivalent to those obtained in complete college-level courses in logic and set theory, analysis, linear algebra and modern algebra, or probability and statistics; (3) data structures, analysis of algorithms, automata theory, or formal languages; and (4) computer architectures.

All applicants are evaluated on the materials submitted: letters of recommendation, official GRE test scores, official college transcripts, and personal statement. For more information, contact the ICS graduate counselor at (949) 824-2277 or send e-mail to gcounsel@ics.uci.edu.

Financial Assistance

Financial assistance is available to Ph.D. students in the form of scholarships, teaching assistantships, and research assistantships. Although assistance varies, it is the Department's goal to support all entering Ph.D. students, subject to availability of funds. International students who apply for teaching assistantships must take the Test of Spoken English (TSE) and earn a minimum score of 50 to be considered for an award.

Financial assistance may be available through teaching assistantships and corporate internships for ICS M.S. students.

Students with a Previously Earned Master's Degree

Credit for one or all required courses may be given at the time of admission to those students who have completed a master's degree in computer science or a closely related field. Course equivalency will be determined by the graduate admissions committee following a written recommendation from a sponsoring research advisor. Research advisors can require that a student take additional courses when this is appropriate.

An additional M.S. degree will not be awarded if the student currently holds an M.S. degree in computer science or a related field from another university.

Course Substitutions

A student who has taken relevant graduate courses at UCI or another university may petition to have a specific course certified as equivalent to one which satisfies 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 concentration area in which the course is taught, or by the ICS Graduate Policy Committee. Only two courses can be substituted.

MASTER OF SCIENCE PROGRAM

A minimum of 48 units is required for the M.S. degree. Course requirements for the M.S. and the Ph.D. degrees are identical and are determined by the concentration research track. Detailed course requirements are listed in the following pages under each concentration area. M.S. concentrations are available in the same areas as the Ph.D. concentrations.

In addition, M.S. students may select a general degree, a concentration in Embedded Systems, or a concentration in Knowledge Discovery in Data. Students may select one of two options: Thesis Plan or Comprehensive Examination Plan. The normative time for completion of the M.S. program is two years. All study must be completed within four calendar years from the date of admission.

Plan I: Thesis Plan. The thesis option is available for graduate students who may wish to continue on to a Ph.D. program or those who wish to concentrate on a specific problem. The student completes 48–52 units of course work (as specified under the concentration area) with a grade of B or better and writes a research or project thesis. A committee of three full-time faculty members is appointed to guide development and final approval of the thesis. Seminar courses such as 229, 239, 249, 259, 269, and 279 cannot be applied to the required units.

Plan II: Comprehensive Examination Plan. The student completes 48–52 units (as specified under the concentration area). Each course must be passed with a grade of B or better. Seminar courses such as 229, 239, 249, 259, 269, and 279 cannot be applied to the required units.

ICS GENERAL M.S. DEGREE PROGRAM

The ICS general M.S. degree program is designed for students who do not wish to specialize in any specific area. Students can explore many of the advanced fields in computer science. These areas include: embedded systems, high-level design, networking, databases, computational geometry, neural networks, data mining, machine learning, graph algorithms, VLSI, social analysis, parallel architectures, user interfaces, software processes, environments, and measurement.

Required Courses

The following courses must be passed with a grade of B or better. Five courses, including at least one from each of the following three categories: *Theory:* Fundamentals of the Design and Analysis of Algorithms (ICS 260), Data Structures (ICS 261), Analysis of Algorithms (ICS 263); *Architecture/CAD/Hardware:* Embedded Systems Concepts (ICS 212), Computer Systems Architectures and Languages (ICS 241), Computer Networks (ICS 243), Introduction to Computer Design (ICS 252); *Software and Systems:* Human–Computer Interaction (ICS 205), Advanced Compiler Construction (ICS 211), Databases (ICS 214), Software Engineering (ICS 221), Distributed Computer Systems (ICS 247).

Seven additional courses which are either ICS graduate courses or ICS undergraduate project courses. At most two undergraduate courses can count toward this requirement. (A course taken as an undergraduate student cannot count toward this requirement.) The undergraduate project courses are: Project in Human–Computer Interaction (ICS 105), Project in System Design (ICS 125), Comprehensive Project in Software System Evolution (ICS 126A-B), Advanced Project in Software Engineering (ICS 127), Project in the Social and Organizational Impacts of Computing (ICS 135),

Language Processor Construction (ICS 145A), Project in Operating System Organization (ICS 145B), Logic Design Laboratory (ICS 155A), Computer Design Laboratory (ICS 155B), Advanced Computer Networks (ICS 156), Project in Algorithms and Data Structures (ICS 165), Project in Artificial Intelligence (ICS 175A), Introduction to Expert Systems (ICS 175B).

Comprehensive Examination

Each student must pass a general written Comprehensive Examination administered and evaluated by a committee assembled by the Associate Chair for Graduate Studies.

M.S. CONCENTRATION IN EMBEDDED SYSTEMS

The goal of the M.S. concentration in Embedded Systems is to prepare ICS students for the challenges in exploiting technologies that are driving computing-based systems into new and emerging application domains. The ever-increasing integration of communications, multimedia, computing and relentless digitization of data continues to expand the scope and the complexity of embedded systems. To appreciate these advances, and to productively contribute to future advances of these systems, a critical appreciation of the underlying scientific principles is a must. The goal of this program is to develop a comprehensive understanding of the hardware and software technologies used in embedded systems. Students will develop an understanding of the technology capabilities and limitations and the methods to evaluate design trade-offs between different technology choices.

Required Courses

The following courses must be passed with a grade of B or better: Compilation and Compiler Design (ICS 211), Embedded System Concepts (ICS 212), Software for Embedded Systems (ICS 213), Validation and Testing of Embedded Systems (ICS 216), Design Automation and Prototyping of Embedded Systems (ICS 217), Advanced System Software (Engineering ECE231).

Six courses from: Software Engineering (ICS 221), User Interfaces and Software Engineering (ICS 227), Computer Systems Architecture (ICS 241), Parallel Computer Architecture and Languages (ICS 242), Computer Networks (ICS 243), Parallel Computing (ICS 244), High-Performance Architectures and Their Compilers (ICS 245), Distributed Computer Systems (ICS 247), Fault-Tolerant Computing (ICS 250), Digital System Verification and Testing (ICS 251), Introduction to Computer Design (ICS 252), VLSI System Design (ICS 254), Design Synthesis (ICS 256), System Tools (ICS 257), Combinatorial Algorithm for Design Synthesis (ICS 258), Graph Algorithms (ICS 265), Real-Time Computer Systems (Engineering ECE253). M.S. students who do not have an undergraduate degree in computer science must also take ICS 260.

Suggested Electives. Students may focus their studies in specific domains within embedded systems by completing groups of electives as shown below.

Embedded System Architectures Focus: ICS 241, 242, 252, 253.

Embedded Software Focus: ICS 221, 227, 242, 245.

Distributed and Networked Embedded Systems Focus: Choose four out of the following five courses: ICS 241, 242, 243, 244, 247.

Micro-Electronic Embedded Systems Focus: ICS 251, 254, 256, 257.

System Reliability and Fault Tolerance Focus: ICS 241, 250, 251, 253.

Theoretical Foundations of Embedded Systems Focus: ICS 243, 247, 258, 265.

Comprehensive Examination

Each student must pass a written Comprehensive Examination administered and evaluated by the Embedded Systems faculty.

M.S. CONCENTRATION IN KNOWLEDGE DISCOVERY IN DATA

The goal of the M.S. concentration in Knowledge Discovery and Data is to educate students in both the fundamental principles of computational methods for modeling data, as well as to provide a broad foundation in emerging methods for knowledge discovery and data mining. Technological advances in digital data collection, memory capacity, and computational power, have revolutionized our view of data analysis in the past 10 years. The volumes of data being collected in science, business, medicine, and government are truly vast in nature. Across all of these areas, there is a rapidly increasing demand for better theories and tools to provide users with improved understanding of their data and to leverage their data for decision support.

Knowledge discovery in databases (KDD) is an emerging discipline within computer science, focused on the principles of how patterns and structure can be inferred from large data sets. It is an area of significant academic interest and research opportunity. For example, a Special Interest Group in Knowledge Discovery in Databases (SIGKDD) was recently started by the Association for Computing Machinery (ACM) to promote both research and professional activities in this area; a new journal called *Data Mining and Knowledge Discovery* was started in 1997; and the field sponsors an annual international conference with over 500 attendees. In addition, the National Science Foundation has recently begun a large interdisciplinary research program in Knowledge and Distributed Intelligence (KDI), based in part on recent research and interest in KDD. Industry participation is also very active with broad demand for graduates in this area, across a wide variety of companies engaged in leveraging scientific and business data for strategic purposes.

Required Courses

The following courses must be passed with a grade of B or better: Databases (ICS 214), Machine Learning (ICS 273), Probabilistic Learning (ICS 274), Data Mining (ICS 278), Descriptive Multivariate Statistics I (ICS 238A).

Two courses from: Project in Artificial Intelligence (ICS 175A), Information Retrieval, Filtering, and Classification (ICS 207), Introduction to Artificial Intelligence (ICS 270), Network-Based Reasoning/Constraint Networks (ICS 275A), Network-Based Reasoning/Belief Networks (ICS 275B), Neural Networks (ICS 276A), Representations and Algorithms for Molecular Biology (ICS 277).

Two courses from: Descriptive Multivariate Statistics II (ICS 238B), Discrete Mathematics and Probability (Psychology 203A), Introduction to Mathematical Statistics (Psychology 203B), Experimental Design (Psychology 203C), Theory of Mathematical Statistics (Mathematics 201A), Probability (Mathematics 270 A-B-C).

Two courses from: Project in System Design (ICS 125), Human Computer Interaction (ICS 205), Software Engineering (ICS 221), Software Analysis and Testing (ICS 224A), User Interfaces and Software Engineering (ICS 227), Foundations of Computer Science (260), Data Structures (ICS 261), Analysis of Algorithms (ICS 263), Graph Algorithms (ICS 265), Computational Geometry (ICS 266).

One elective: any ICS graduate course may be selected; a non-ICS course can only be taken with approval from one of the KDD faculty.

Comprehensive Examination

Each student must pass a written Comprehensive Examination administered and evaluated by the KDD faculty.

DOCTOR OF PHILOSOPHY PROGRAM

The Ph.D. program leads to a concentration in one of eight areas: Algorithms and Data Structure (Theory), Artificial Intelligence (AI); Computer Systems and Networks (CSN); Computer Systems Design (CSD); Computing, Organizations, Policy, and Society (CORPS); Informatics in Biology and Medicine (IBaM); Information Access and Management (IAM); Software (SW). 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.

Course Requirements

Course requirements for each concentration area are listed on the following pages. In addition, every Ph.D. student must complete the following core course requirements with a grade of B or better.

One course in Theory selected from: Foundations of Theoretical Computer Science (ICS 260), Data Structure (ICS 261), or Analysis of Algorithms (ICS 263); one course in Architecture/CAD/Hardware selected from: Embedded Systems Concepts (ICS 212), Computer Systems Architectures and Languages (ICS 241), Computer Networks (ICS 243), or Introduction to Computer Design (ICS 252); and one course in Software and Systems selected from: Human-Computer Interaction (ICS 205), Compiler Construction (ICS 211), Databases (ICS 214), Software Engineering (ICS 221), or Distributed Computer Systems (ICS 247).

Teaching Requirements for the Ph.D. Program

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.

Examinations and Dissertation for the Ph.D. Program

Each doctoral 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 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 computer vision, scheduling, resource allocation, scientific computing, 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 200); Data Structures (ICS 261); Computational Complexity (ICS 262); Analysis of Algorithms (ICS 263); two courses from: Graph Algorithms (ICS 265), Computational Geometry (ICS 266), Special Topics in ICS (ICS 280) taught by Theory faculty; at least three quarters of Seminar in Theory (ICS 269); 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 for the Ph.D. Degree

Each student must write a survey paper and a research paper of publishable quality.

CONCENTRATION IN ARTIFICIAL INTELLIGENCE (AI)

Research in Artificial Intelligence (AI) is aimed at understanding the computational mechanisms that underlie intelligent behavior, and at designing computational systems that exhibit it. The AI group at ICS is involved in research on machine learning and knowledge discovery; deductive and probabilistic reasoning; constraint satisfaction techniques; neural networks and cognitive architectures; sophisticated image and signal processing; scientific reasoning in domains such as molecular biology, medicine, and space science; intelligent web-based agents; and the psychological investigation of human learners. The group is interested in basic research into the fundamental principles of intelligence; the methods by which knowledge is acquired, summarized, organized, and utilized to solve complex problems; the construction of computational artifacts that support algorithmically, cognitively, or conceptually challenging tasks and embody behavior associated with intelligent systems; and applications that confront intelligent systems with real-world tasks. Within the general field of AI, ICS faculty specialize in machine learning, knowledge discovery and data mining, automated reasoning, constraint-based and probabilistic-based reasoning, and brain modeling.

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 200); two courses in Special Topics in Information and Computer Science (ICS 280), one taught by AI area faculty; Introduction to Artificial Intelligence (ICS 270A); three courses selected from: Machine Learning (ICS 273), Probabilistic Learning (ICS 274), Network-Based Reasoning/Belief Networks (ICS 275B), Neural Networks (ICS 276A), or Representations and Algorithms for Molecular Biology (ICS 277); two additional courses from: Information Retrieval, Filtering, and Classification (ICS 207), Advanced Artificial Intelligence Programming (ICS 270B), Network-based Reasoning/Constraint Networks (ICS 275A), Seminar in Models of the Brain (ICS 276B), Cognitive and Computational Neuroscience (ICS 276C), or Data Mining (ICS 278); and five graduate courses outside of Artificial Intelligence, at least three of which must be within the ICS Department.

Paper Requirement for the Ph.D. Degree

Each student must write two research papers of publishable quality.

CONCENTRATION IN COMPUTER SYSTEMS AND NETWORKS (CSN)

This area of research and study is concerned primarily with the development of systems software, that is, the software infrastructure that makes the development and use of applications possible. This includes compilers, operating systems, networking software, performance tools, and software development environments, which are studied from both theoretical and practical points of view.

The CSN research group is particularly interested in systems software in the context of parallel or decentralized systems, that is, systems having multiple CPUs, including computer networks and both shared- and distributed-memory multiprocessor architectures, which offer great new opportunities in distributed computing and communication as well as performance-oriented scientific computing, but also pose major technological challenges to researchers and developers of parallel/distributed computer systems. The specific topics studied by the faculty members of this concentration area include: design and study of paralleling compilers; design and analysis of high-speed multimedia networks; object-oriented frameworks for distributed systems; approaches to portable and mobile programs; development of coordination paradigms for distributed applications; support for distributed simulations; design and study of extensible and run-time adaptable operating systems and software environments; system support for high-performance scientific computing; and distributed algorithms.

Applicants with a focus on engineering may also refer to the concentrations in Computer Networks and Distributed Computing, and Computer Systems and Software, offered by the Department of Electrical and Computer Engineering.

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (200); Advanced Compiler Construction (ICS 211); Computer Systems Architecture (ICS 241); Computer Networks (ICS 243); Software Engineering (ICS 221); Data Structures (261).

Three from the following list: 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); Queuing Theory (ICS 248); Fault-Tolerant Computing (ICS 250); Analysis of Algorithms (ICS 263).

Two other ICS courses: these must be regular graduate courses, including those listed above which were not already taken, and excluding 229, 239, 249, 259, 269, 279, 280, 290. One of these courses may be substituted by an Electrical and Computer Engineering course selected from the following list: Advanced System Software (ECE231); Distributed Computer Systems (ECE252); Real-Time Computer Systems (ECE253); Parallel Database Systems Engineering (ECE257).

Paper Requirement for the Ph.D. Degree

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. Within the general area of computer systems, ICS faculty specialize in hardware/software codesign for embedded systems; CAD tools for VLSI, systems-on-silicon, and novel architectures; broadband, networked, and portable systems; retargetable optimizing compilers; and system-specification and performance-analysis techniques.

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 200); at least three quarters of Seminar in Design Science (ICS 249 or 259); Computer Systems Architecture and Languages (ICS 241); five graduate courses outside of Computer Systems Design but within ICS, no more than three of which may be in one area; and four core courses selected from the following: Introduction to Embedded Computing Systems (ICS 212), Software for Embedded Systems (ICS 213), Fault-Tolerant Computing (ICS 250), Digital System Verification and Testing (ICS 251), Introduction to Computer Design (ICS 252), Design Description and Modeling (ICS 253), VLSI System Design (ICS 254 or Engineering ECE251), Physical Design Automation (ICS 255 or Engineering ECE238), Design Synthesis (ICS 256), System Tools (ICS 257), Combinatorial Algorithms for Design Synthesis (ICS 258).

Paper Requirement for the Ph.D. Degree

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 a research focus 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; use of virtual communities, the Internet, and digital libraries; and technical support for organizational learning and memory. Work in these areas consists of both empirical research and the building of prototype 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 200); 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: Human-Computer Interaction (ICS 205), Computer Supported Cooperative Work (ICS 233), Computerization, Work, and Organizations (ICS 234A), Theories of Computerization and Information Systems (ICS 234B), Computing and Cyberspace (ICS 234C), Qualitative Research Methods in Information Systems (ICS 235A) or Social Ecology 217 or Management 290, Quantitative Research Methods in Information Systems (ICS 235B) or Descriptive Multivariate Statistics I and II (ICS 238A and 238B) or Social Science 201A-B; 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 for the Ph.D. Degree

Each student must write a survey paper and a research paper of publishable quality.

CONCENTRATION IN INFORMATICS IN BIOLOGY AND MEDICINE (IBaM)

Biology and medicine have become data-intensive information sciences. Massive data acquisition technologies, such as genome sequencing, high-throughput drug screening, and DNA arrays, generate biological information in quantities that overwhelm conventional approaches. Cost-effective health care and quality medical decision-making require integrating large amounts of up-to-date information and knowledge. Biological systems have also inspired computer science advances with new concepts, including genetic algorithms, artificial neural networks, computer viruses and synthetic immune systems, DNA computing, artificial life, and hybrid VLSI-DNA gene chips. New computational opportunities such as these create a critical need for theoretical and algorithmic advances in storing, retrieving, networking, processing, analyzing, and visualizing biomedical information.

Informatics in Biology and Medicine is an interdisciplinary concentration at the interface between computer sciences, biological sciences, and medicine. It addresses problems that are specific to the information technologies in biology, medicine, and health care. Research topics include gene finding, protein structure and function prediction, structural and functional genomics, proteomics, electronic patient record systems, medical decision support systems, guideline-based health care, medical information access, and human-computer interfaces for medical applications. To make advances in these areas, society needs people with knowledge and skills that bridge those taught in conventional biological, medical, and computer science curricula. This area provides for such an interdisciplinary computer science education.

Background: Students should have already taken at least one undergraduate course in basic biology, or must make up that deficit during their first year with one of these courses: Patterns of Diversity, Ecology, and Evolution (Biological Sciences 94), Biochemistry (Biological Sciences 98), Molecular Biology (Biological Sciences 99), Developmental and Cell Biology (Biological Sciences 108), Human Physiology (Biological Sciences 109).

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 200); Introduction to Medical Informatics (ICS 208); Representations and Algorithms for Molecular Biology (ICS 277A); at least three quarters of Seminar in Informatics in Biology and Medicine (ICS 209); four courses from: Human-Computer Interaction (ICS 205), Knowledge-Based User Interfaces (ICS 206), Information Retrieval, Filtering, and Classification (ICS 207), Advances in Database Management Systems Technology (ICS 215), User Interfaces and Software Engineering (ICS 227), Computerization, Work, and Organizations (ICS 234A), Computational Geometry (ICS 266), Machine Learning (ICS 273), Probabilistic Learning: Theory and Algorithms (ICS 274), Network-Based Reasoning/Belief Networks (ICS 275B), Neural Networks (ICS 276A), Cognitive and Computational Neuroscience (ICS 276C), Probabilistic Modeling of Biological Data (ICS 277B), Data Mining (ICS 278), special topics taught by one of the faculty in this area (ICS 280—only one 280 course counts toward the advanced topics requirement); two courses from: Systems, Anatomy, and Physiology I (Engineering 210A), Environmental Health Sciences III: Biostatistics and Epidemiology (Environmental Analysis and Design E226), Decision Analysis (Management 283), Molecular Evolutionary Methods (Ecology and Evolutionary Biology 251), Problems in Genomic Analysis (Biological Chemistry 204), Structure and Biosynthesis of Nucleic Acids (Molecular Biology and Biochemistry 203), Structure and Biosynthesis of Proteins (Molecular Biology and Biochemistry 204), Macromolecular Structure, Function, and Interaction (Molecular Biology and Biochemistry 240), Cellular and Molecular Neuroscience (Physiology and Biophysics 202; upon petition, an undergraduate course may be substituted for one of the above interdisciplinary graduate-level courses; and ICS core course requirements.

Paper Requirement for the Ph.D. Degree

Each student must write a survey paper and a research paper of publishable quality.

CONCENTRATION IN INFORMATION ACCESS AND MANAGEMENT (IAM)

The Internet has made vast amounts of textual and multimedia information available to the general public, yet we still have many problems accessing this information efficiently and effectively. Research in Information Access and Management aims to address such problems. It concerns the study and development of concepts, technologies, and tools for searching, retrieving, storing, organizing, and presenting information. The foundation of this concentration combines the areas of databases, information retrieval, and human-computer interaction, which serve as the core of the formal course work. Additional electives allow students to explore in detail a particular subtopic within this field or take courses in Cognitive Science, Economics, or Anthropology to complement the technical courses. Specific research emphases of the IAM faculty members include: intelligent information gathering agents, information visualization, hyperware for linking heterogeneous information sources, multimedia content extraction and representation, multimedia servers, adaptive Web sites, and collaborative information filtering.

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 200); Databases (ICS 214); Information Retrieval, Filtering, and Classification (ICS 207); Human-Computer Interaction (ICS 205); three courses from: Knowledge-Based User Interfaces (ICS 206), Advances in Database Management Systems (ICS 215), Multimedia Systems (ICS 216), Formal Methods in Software Engineering (ICS 222), User Interfaces and Software Engineering (ICS 227), Computer-Supported Cooperative Work (ICS 233), Computing and Cyberspace (ICS 234C), Machine Learning (ICS 273), Probabilistic Learning: Theory and Algorithms (ICS 274), Data Mining (ICS 278), special topics taught by one of the faculty in this concentration (ICS 280—only one 280 course counts toward this requirement); three other graduate courses; and ICS core course requirements.

Paper Requirement for the Ph.D. Degree

Each student must write two research papers of publishable quality.

CONCENTRATION IN SOFTWARE (SW)

Software has transformed society in dramatic and powerful ways. From the World Wide Web to pilotless vehicles to spreadsheets, software systems inform, control, and enhance daily activities. Software research at UCI is aimed at creating new software technology and solutions, furthering the information revolution. Perspectives of engineering, science, mathematics, and human-computer interaction guide the work. The central goal of all the research is improvement in software development, evolution, deployment, quality, and cost-effectiveness.

Specific research emphases of the five faculty members in the concentration include: analysis and testing, software understanding, empirically-guided analysis, environments, software architectures, hypermedia, workflow, user interface software, process, formal methods, specification languages, extensible component-based software systems, distributed event-based systems, and programming languages and their implementation. Research projects undertaken by the faculty and graduate students receive financial support from the Defense Advanced Research Projects Agency (DARPA), the National Science Foundation (NSF), the Air Force Office of Scientific Research (AFOSR), and the State of California, among others. A valuable and unusual feature of the concentration is the opportunity to work with the Software group's industrial partners. These companies provide opportunities for internships, support research projects, and provide a test-bed for evaluation of new ideas. Graduates of the program have taken careers in research universities, industrial research laboratories, colleges, and industry.

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 200); Software Engineering (ICS 221); 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 224), Software Processes (ICS 225), Software Measurement (ICS 226), User Interfaces and Software Engineering (ICS 227), 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, drawn from a list maintained by the faculty.

Paper Requirement for the Ph.D. Degree

Each student must write a survey paper with an extensive bibliography 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.

10A Information: Presentation and Representation (4). Kinds of information, including quantitative, probabilistic, textual, graphic, audio. Locating information, evaluating reliability. Representing information on paper, in computer systems, in other media. Organization into hierarchies, networks, tables. Effectiveness and efficiency of alternative representations and organizations. Measuring information; redundancy, compression. Formerly ICS 10. (V)

10B Computer-Based Information Systems (4). The analysis, design, implementation, quality assurance, deployment, and ongoing management of computer-based information systems, and related software, hardware and networking issues; end-user customization of applications and interfaces, and selection of information, via query macro and scripting languages. Prerequisite: ICS 10A. Formerly ICS 11. (V)

10C Networked Information Discovery and Retrieval (4) W. Network-based communication and information resources, including electronic mail, news, and other sources. Technical, personal, and social aspects of their development, access, and use. Extensive use of a wide range of established and developing technologies. Prerequisite: ICS 10B. Formerly ICS 1C. (V)

LOWER-DIVISION

COURSES FOR MAJORS AND NONMAJORS

6A Discrete Mathematics for Computer Science (4) F, W. Covers essential tools from discrete mathematics used in computer science with an emphasis on the process of abstracting computational problems and analyzing them mathematically. Topics include: combinatorics, mathematical induction, elementary probability, and asymptotic analysis. Prerequisite: high school mathematics through trigonometry. Same as Mathematics 6A. (V)

21 Introduction to Computer Science I (6) F, W, S. First of a three-quarter introductory course. Introduces fundamental concepts related to computer software design and construction. Develops initial design and programming skills using a high-level programming language (primarily C++/Java). Introduces useful computer-based tools for analysis, expression, discovery. (V)

H21 Honors Introduction to Computer Science (6) F. First of a three-quarter introductory sequence. 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 analyses, expression, and discovery. Prerequisite: enrollment open to ICS majors in the Campuswide Honors Program or by consent of the Department of Information and Computer Science. ICS H21 and ICS 21 may not both be taken for credit. (V)

22 Introduction to Computer Science II (6) W, S. Second of a three-quarter introductory sequence. Abstract behavior of classic data structures (stacks, queues, priority queues, tables, trees), alternative implementations, analysis of time and space efficiency. Recursion. Object-oriented and functional programming. Models of computation. Corequisite or prerequisite: ICS 6A or Mathematics 6A. Prerequisite: ICS 21 with a grade of C or better. (V)

H22 Honors Introduction to Computer Science II (6) W. Second of a three-quarter introductory sequence. 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. Corequisite or prerequisite: Mathematics 6A or ICS 6A. Prerequisite: ICS H21 with a grade of B- or better or ICS 21 with a grade of A or better. ICS H22 and ICS 22 may not both be taken for credit. (V)

23 Fundamental Data Structures (4) F, S. Focuses on implementation and mathematical analysis of fundamental data structures and algorithms. Covers storage allocation and memory management techniques. Prerequisites: ICS 22 with a grade of C or better or Engineering ECE40; Mathematics 6A or ICS 6A. ICS 23 and H23 may not both be taken for credit. (V)

H23 Introduction to Computer Science III (4) S. Third of a three-quarter introductory course. Builds on ICS H22 with respect to mathematical tools and analysis. Focuses on fundamental algorithms in computer science, basic data structures for primary and secondary memory, storage allocation and management techniques, data description, and design techniques. Prerequisites: ICS H22 with a grade of B- or better or ICS 22 with a grade of A or better; Mathematics 6A or ICS 6A. ICS H23 and 23 may not both be taken for credit. (V)

51 Introductory Computer Organization (6) F, S. Multilevel view of system hardware and software. Operation and interconnection of hardware elements. Instruction sets and addressing modes. Virtual memory and operating systems. Laboratory work using low-level programming languages. Prerequisites: ICS 21 with a grade of C or better; Mathematics 6B.

52 Introduction to Software Engineering (6) F, W. Introduction to the concepts, methods, and current practice of software engineering. The study of large-scale software production; software life cycle models as an organizing structure; principles and techniques appropriate for each stage of production. Laboratory work involves a project illustrating these elements. Prerequisite: ICS 23 with a grade of C or better.

54 Introduction to Multitasking Operating Systems (4) F. In-depth study of principles and concepts embodied in modern internet-connected, multiuser, multitasking operating systems, including shells, filters, pipelines, programmability and scripting, extensibility, concurrent processing, and interprocess communication. Several integral tools and utilities are presented. Unix is used to provide concrete examples. Prerequisite: ICS 23 with a grade of C or better. ICS 54 and Engineering 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 underrepresented or underprepared majors in Engineering, ICS, or selected areas of the physical sciences. Typical program activities: tutoring, study skills, career planning, self-esteem enhancement, library research techniques, graduate study planning, and independent studies. 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.

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 125, as well as other courses. Students' abilities to achieve their grade in a course will not be affected by their participation in experiments.

102 Requirements Analysis and Engineering (4). Aims to equip students to develop techniques of software-intensive systems through successful requirements analysis techniques and requirements engineering. Students learn systematic process of developing requirements through co-operative problem analysis, representation, and validation. Prerequisites: ICS 121; Mathematics 2A-B-C.

105 Project in Human-Computer Interaction and User Interfaces (4) F. Aims to prepare students to develop user interfaces to software by providing them with a thorough background in human-computer interaction principles. The project includes both development and evaluation of a user interface. Prerequisites: ICS 121, 131, and 141.

121 Software Tools and Methods (4) F, S. Concepts and techniques of constructing software in a systematic fashion, including detailed design techniques, specifications, programming methods, quality-inducing procedures, development tools, team techniques, testing, estimation, and performance improvement. Laboratory work involves exercises to illustrate important concepts, methods, and tools. Prerequisites: ICS 52 with a grade of C or better; Mathematics 6A or ICS 6A; Mathematics 6B; Mathematics 6C or 3A; satisfactory completion of the lower-division writing requirement.

122 Software Specification and Quality Engineering (4) F. Aims to prepare students to develop high-quality software through successful specification and quality engineering techniques. Students learn what high-quality means, how to plan for and achieve it, and how to measure it. Prerequisites: ICS 121 and 141; Mathematics 2A-B-C.

123 Software Architectures, Distributed Systems, and Interoperability (4) S. Aims to prepare students to engineer well-structured software systems. Students learn a wide range of software architectural styles, architectural platforms that provide standard services to applications, and formal architecture description languages. Prerequisites: ICS 51 with a grade of C or better; ICS 121 and 141; Mathematics 2A-B-C.

125 Project in System Design (4) F, 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 51 with a grade of C or better; ICS 121 and 141; Mathematics 2A-B-C.

126A-B Comprehensive Project in Software System Evolution (4) W, S. Provides students with an industrial-like software development experience. Students undergo the vicissitudes of developing a large-scale software system from several points of view and specify, design, construct, test, document, and evolve a complete software system. Students must enroll in both quarters. In-Progress grade for ICS 126A; final grades for both quarters will be assigned upon completion of 126B. Prerequisites: ICS 51 with a grade of C or better; ICS 121 and 141; Mathematics 2A-B-C.

127 Advanced Project in Software Engineering (4). Students work in teams to specify, design, construct, test, and document a complete software system in a specialized application domain using application/domain-specific techniques. Each offering's topic is announced the preceding spring. Prerequisites: ICS 125 or 126A; Mathematics 2A-B-C.

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 (with a grade of C or better) 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. 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) F, W, S. Study and practice of critical and technical writing as it applies to the field of computer science. Each student writes essays of varying lengths, totaling at least 4,000 words. Prerequisite: completion of lower-division writing requirement; upper-division standing; 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 different programming paradigms, such as logic programming, functional programming and object-oriented programming; implementation strategies, programming environments, and programming style. Prerequisites: ICS 23 and ICS 51 with grades of C or better.

142 Compilers and Interpreters (4) F. 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 with a grade of C or better. Recommended: ICS 142.

145A Language Processor Construction (4) F. 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/IO subsystem. Hardware/software tradeoffs. Emphasis on logical organization of system and communication. Prerequisite: ICS 143.

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 Digital Logic Design (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 with grades of C or better; Mathematics 6A or ICS 6A; Mathematics 6B.

152 Computer Systems Architecture (4) W. Design of computer elements: ALU, control unit, and arithmetic circuits. Memory hierarchy and organization. Caches. Function unit sharing and pipelining. I/O and interrupt processing. RTL and behavioral modeling using hardware description languages. Microprocessor organization and implementation techniques. Prerequisite: 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 with grades of C or better; Mathematics 6A or ICS 6A; Mathematics 6B; Mathematics 6C or 3A.

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. Prerequisites: ICS 151 or concurrent enrollment; satisfactory completion of the lower-division writing requirement.

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) S. 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) W. 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. 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 and 51 with grades of C or better; Mathematics 6A or ICS 6A; Mathematics 6B; Mathematics 6C or 3A; Mathematics 2A-B-C; satisfactory completion of the lower-division writing requirement. Prerequisite for Computer Engineering majors only: ICS 23.

162 Formal Languages and Automata (4) W. Formal aspects of describing and recognizing languages by grammars and automata. Parsing regular and context-free languages. Ambiguity, nondeterminism. Elements of computability: Turing machines, random access machines, undecidable problems, NP-completeness. Prerequisites: ICS 23 and ICS 51 with grades of C or better; Mathematics 2A-B-C; Mathematics 6A or ICS 6A; Mathematics 6B; Mathematics 6C or 3A. Same as Linguistics 102.

163 Graph Algorithms (4). Algorithms for solving fundamental problems in graph theory. Graph representations, graph traversal, network flow, connectivity, graph layout, matching problems. Prerequisite: ICS 161.

164 Principles of Computational Geometry (4). Algorithms and data structures for geometric computation and graphics programming. Fundamental problems of computational geometry such as convex hulls, Voronoi diagrams, Delaunay triangulations, polygon partitioning, arrangements, geometric searching, hidden surface elimination, motion planning. Prerequisite: ICS 161.

165 Project in Algorithms and Data Structures (4) S. Design, implementation, execution, and analysis of algorithms for problems such as sorting, searching, data compression, and data encryption. Time-space-structure trade-offs. Prerequisite: ICS 161.

171 Introduction to Artificial Intelligence (4) F, W, S. Different means of representing knowledge and uses of representations in heuristic problem solving. Representations considered include predicate logic, semantic nets, procedural representations, natural language grammars, and search trees. Prerequisites: ICS 52 with a grade of C or better; Mathematics 2A-B-C.

172 Programming Techniques in Artificial Intelligence (4) W. The study of methods for implementing artificial intelligence programs in high-level languages. Exercises on implementation of data structures for representing rules, frames, grammars, networks, and algorithms for search, inference, language processing, and learning. Prerequisite: ICS 171.

173 Neural Networks (4) S. 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 52 with a grade of C or better; Mathematics 2A-B-C; Mathematics 6C or 3A.

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 171.

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 171.

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 with a grade of C or better. Same as Engineering ECE146.

186 Computer Graphics (4) S. Interactive graphics software and hardware. Survey of interactive graphic design systems spanning a large family of disciplines. Each class member will generate an operational program demonstrating interactive graphics as a human-computer communication medium. Prerequisite: ICS 52 with a grade of C or better.

187 Computer Game Development (4) S. Introduction to the principles of interactive two- and three-dimensional computer game development. Concepts in computer graphics, algorithms, software engineering, art and graphics, music and sound, story analysis, and artificial intelligence are presented and are the basis for student work. Prerequisites: ICS 186, and ICS 121 or 161 or 171; or Music 151; or Studio Art 106; or consent of instructor.

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

200 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. Formerly ICS 202.

205 Human–Computer Interaction (4). The design and evaluation of interfaces to computer systems and applications with special attention to their fit to human cognitive capabilities and organizational practices. Includes coverage of hypermedia, groupware, and other rapidly emerging developments.

206 Knowledge-Based User Interfaces (4). Concepts related to the development of interactive software systems with a focus on knowledge-based tools and human-centered design. Topics span the fields of human-computer interaction, software engineering, and knowledge representation. Prerequisite: ICS 171 or equivalent.

207 Information Retrieval, Filtering, and Classification (4). Algorithms for the storage, retrieval, filtering, and classification of textual and multimedia data. The vector space model, Boolean and probabilistic queries, and relevance feedback. Latent semantic indexing; collaborative filtering; and relationship to machine learning methods. Prerequisites: B.S. degree in computer science, or ICS 161, 171; Mathematics 3A or 6C; and a course in basic probability.

208 Introduction to Medical Information (4). Concepts related to the incorporation of information technology into health care environments, covering both the technological challenges and the social challenges. Topics include medical decision support systems, electronic patient records, information retrieval, standards, data security, human-computer interaction, and computer-aided instruction. Prerequisite: undergraduate degree in computer science, biological sciences, or health sciences with some exposure to the fundamentals of computing.

209 Seminar for Informatics in Biology and Medicine (2). Current research and research trends in bioinformatics and medical informatics. Forum for presentation and criticism by students of recently published research and work in progress. Prerequisite: ICS 208, 277A, or 277B, or a basic understanding of bioinformatics or medical informatics. May be repeated for credit.

211 Advanced Compiler Construction (4). Advanced study of programming language implementation techniques: optimizations such as common subexpression elimination, register allocation, and instruction scheduling. Implementation of language features such as type-directed dispatch, garbage collection, dynamic linking, and just-in-time code generation. Prerequisite: ICS 142 or equivalent.

212 Introduction to Embedded Computing Systems (4). Embedded system technologies including processors, DSP, memory, and software. System interfacing basics; communication strategies; sensors and actuators; mobile and wireless technology. Using pre-designed hardware and software components. Design case studies in wireless, multimedia, and/or networking domains. Prerequisites: B.S. degree in computer science; or ICS 51, 152; Mathematics 3A or 6C or ICS 6A; ICS 161.

213 Software for Embedded Systems (4). Embedded computing elements, device interfaces, time-critical IO handling. Embedded software design under size, performance, and reliability constraints. Software timing and functional validation. Programming methods and compilation for embeddable software. Embedded runtime systems. Case studies of real-time software systems. Prerequisites: B.S. degree in computer science; or ICS 51, 152; Mathematics 3A or 6C or ICS 6A; ICS 161.

214 Databases (4). Examines basic principles of data management in both conventional and advanced database systems. Topics include: the relational database model and query languages; the network model; semantic and object-oriented databases; security and integrity; issues in distributed database management. Formerly ICS 211.

215 Advances in Database Management Systems Technology (4). Multidimensional data structures. Access methods in databases, spatial databases, spatio-temporal databases, multimedia database management, uncertainty in databases, data analysis, and decision support in databases. Prerequisites: ICS 143, 152, 161, and 214 or consent of instructor.

216 Validation and Testing of Embedded Systems (4). Embedded system building blocks including IP cores. Co-simulation. Formal verification using model checking. Verification environments. Test challenges in core integration: compliance, feature, random, and collision testing. Core access and test integration. Interface-based verification and standards. Prerequisite: B.S. degree in computer science or basic courses in algorithms and data structures, calculus, discrete mathematics, linear algebra, symbolic logic.

217 Design Automation and Prototyping of Embedded Systems (4). System representation and modeling. Abstract and language models. Simulation as a modeling activity. Computation and hw/sw systems prototypes. System analysis using models. Constraint and interface modeling. Behavioral compilation and synthesis. Prerequisites: B.S. degree in computer science or ICS 51, 152, 161, 212, and Mathematics 3A or 6C.

218 Multimedia Systems and Applications (4). Organization and structure of modern multimedia systems; audio and video encoding/compression; quality of service concepts; scheduling algorithms for multimedia; resource management in distributed and multimedia systems; multimedia protocols over high-speed networks; synchronization schemes; multimedia applications and teleservices. Prerequisites: undergraduate degree in computer science or ICS 143 and 161. ICS 148, 153, and 156 are also recommended. Undergraduates may enroll with consent of instructor.

219 Seminar in Compilers and Operating Systems (2). Current research and research trends in system-level software such as compilers and operating systems. Forum for presentation and criticism by students of new published research and work in progress. Prerequisites: undergraduate degree in computer science or ICS 142 and 143. May be taken for credit twice.

221 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. Formerly ICS 221A.

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.

224 Software Analysis and Testing (4). Studies techniques for developing confidence in software from traditional testing schemes to integrated, multi-technique analytic approaches. Considers strengths and weaknesses and explores opportunities for synergistic technique application. Emphasis is on approaches integrated into the software process. Formerly ICS 224A.

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 systems in supporting work in groups and organizations. Examines various technologies designed to support communication, information sharing, and coordination. Focuses on behavioral and social aspects of designing and using group support technologies.

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.

234C Computing and Cyberspace (4). Selected topics in Internet-level computerization and systems, including electronic communities, distributed information services, electronic commerce, and digital libraries. Surveys systems and architectures. Theories of social interaction, computer-mediated communication, and social-technical system design. Examines social studies of cyberspace use and impacts. Prerequisite: 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.

238A 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. Satisfactory/Unsatisfactory grading only. Prerequisite: Social Science 100A-B-C or equivalent. Same as Social Ecology 290A, Social Science 201A, and Management 290X.

238B Descriptive Multivariate Statistics II (4). Presentation of the principle methods of multivariate statistics including criteria for appropriate use and the interpretation of resulting measurements. Computer exercises are used to demonstrate concepts. Prerequisite: ICS 238A. Same as Social Ecology 290B, Social Science 201B, and Management 290Y.

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.

241A 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 153, or equivalent. Formerly ICS 241.

241B Modern Microprocessors (4). Fundamental concepts and recent advances in computer architecture necessary to understand and use modern microprocessors. Topics span out-of-order execution, multiple instruction issue, control/data speculation, predication, advanced cache and DRAM organizations, embedded systems, DSP and multi-media instructions. Prerequisite: ICS 241A 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.

243A 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. Formerly ICS 243.

243B Networking Laboratory (4). Structured around exercises that highlight topics taught in ICS 243A such as addressing, sub-netting, bridging, ARP, routing. Also focuses on network simulation and design. Structured around weekly readings and laboratory assignments. Prerequisite: ICS 153 or 243A, or ECE229A.

243C High-Speed Networks (4). Provides an overview of high-speed networking technologies. Topics covered include ATM networks, mechanisms to make the Internet high speed, integration of ATM and Internet, other types of high-speed networks, and case studies. Prerequisite: ICS 243A or equivalent.

243D Internet Technology (4). Introduction to Internet technologies. The focus is on both the Internet architecture and applications. Topics covered include Internet routing and multicast protocols, Internet support protocols, Unix network programming, Web, Internet design, and measurement tools. Prerequisite: ICS 243A or equivalent.

243E Wireless and Mobile Networking (4). Provides a basic introduction to wireless networking. The focus is on layers 2 and 3 or the OSI reference model, design, performance analysis, and protocols. Topics covered include: an introduction to wireless networking, digital cellular, next generation cellular (G3), wireless LANs, and mobile IP. Prerequisite: ICS 153 or 243, or ECE229A and an introductory course in probability, or 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.

260 Fundamentals of the Design and Analysis of Algorithms (4). Covers fundamental concepts in the design and analysis of algorithms and is geared toward non-specialists in theoretical computer science. Topics include: deterministic and randomized graph algorithms, fundamental algorithmic techniques like divide-and-conquer strategies and dynamic programming, and NP-completeness. Prerequisite: ICS 161 or equivalent undergraduate algorithms course.

261 Data Structures (4). An in-depth treatment of data structures and their associated management algorithms including resource complexity analysis. Prerequisite: ICS 23 and 161.

262 Computational Complexity (4). Advanced course in computational models and complexity classes. Covers the fundamentals of Turing Machines, Decidability, and NP-completeness. Includes discussion of more advanced topics including polynomial hierarchy, randomized complexity classes, #P-completeness and hardness of approximation. Prerequisite: 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.

267 Data Compression (4). An introduction to the theory and practice of modern data compression techniques. Topics include codes, coding, modeling, text compression, lossless and lossy image compression standards and systems, audio compression. Prerequisite: ICS 261 or equivalent.

268 Cryptography and Computer Security (4). Overview of modern cryptography; security threats and countermeasures; secret and public key cryptography; digital signatures and non-repudiation; cryptographic strength; block cipers and stream cipers; computer and network security; data privacy and data integrity; authentication and identification; freshness and timeliness. Prerequisites: ICS 161, 162, 260, 261, 262, 263, or equivalent; consent of instructor.

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). The study of theories and computational models for systems which behave and act in an intelligent manner. Fundamental subdisciplines of artificial intelligence including knowledge representation, search, deduction, planning, probabilistic reasoning, natural language parsing and comprehension, knowledge-based systems, and learning.

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.

273 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. Formerly ICS 273A.

274 Probabilistic Learning: Theory and Algorithms (4). A unified probabilistic framework for learning algorithms. Classical pattern recognition algorithms, probabilistic mixture models, kernel methods, hidden Markov models, among others. Multivariate data analysis concepts for classification and clustering. Methodologies such as cross-validation and bootstrap. Prerequisites: basic calculus and linear algebra.

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 consequents in learning and memory. Theories of hippocampal function; thalamocortical function and interactions among neocortical layers.

277A Representations and Algorithms for Molecular Biology (4). Introduction to computational methods in molecular biology, aimed at those interested in learning about this interdisciplinary area. Covers computational approaches to understanding and predicting the structure, function, interactions, and evolution of DNA, RNA, proteins, and related molecules and processes. Prerequisite: a basic course in algorithms, or a basic course in molecular biology, or consent of instructor. Formerly ICS 277.

277B Probabilistic Modeling of Biological Data (4). A unified Bayesian probabilistic framework for modeling and mining biological data. Applications range from sequence (DNA, RNA, proteins) to gene expression data. Graphical models, Markov models, stochastic grammars, structure prediction, gene finding, evolution, DNA arrays, single- and multiple-gene analysis. Prerequisite: a basic course in algorithms and molecular biology, or ICS 277A or equivalent, or consent of instructor.

278 Data Mining (4). Introduction to the general principles of inferring useful knowledge from large data sets (commonly known as data mining or knowledge discovery). Relevant concepts from statistics, databases and data structures, optimization, artificial intelligence, and visualization are discussed in an integrated manner. Prerequisites: basic courses in algorithm design and analysis; linear algebra; probability and statistics.

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

287 Advanced Topics in Three-Dimensional Computer Graphics (4) F, W, S. Advanced topics in three-dimensional graphics on rendering, geometric modeling, and visualization. Subjects range from illumination and shading, and multiresolution representations, to other advanced algorithms and data structures in graphics. Also looks at trends that go beyond traditional computer graphics. Prerequisites: ICS 161, 164, 186, and 266.

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.

398A Teaching Assistant Training Seminar (2) F. Theories, methods, and resources for teaching computer science at the university level, particularly by teaching assistants. Classroom presentations, working with individuals, grading, motivating students. Participants will give and critique presentations and may be videotaped while teaching. Satisfactory/Unsatisfactory only. Formerly ICS 398.

398B Advanced Teaching Assistant Seminar (2) F. Teaching computer science at the university level, emphasizing issues in teaching an entire course. Course organization, designing examinations and projects, grading, motivating students. Participants will begin to assemble teaching portfolios. Satisfactory/Unsatisfactory only. Prerequisite: ICS 398A or consent of instructor.

399 University Teaching (4). Involves on-the-job experience for Teaching Assistants. Limited to and required of Teaching Assistants.

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, the IDPs in Chicano/Latino Studies, Global Peace and Conflict Studies, and History and Philosophy of Science offer minors. A graduate degree program is offered by the IDP in Transportation Science. In addition, interdisciplinary minors in Asian Studies, Global Sustainability, Native American Studies, and Religious Studies are available.

Information about the IDPs in African-American Studies, Asian American Studies, Latin American Studies, and Women's Studies is available in the School of Humanities section.

Minor in Chicano/Latino Studies

383 Social Science Tower; (949) 824-7180
E-mail: clsp@uci.edu
World Wide Web: http://www.socsci.uci.edu/clstudies
Robert Garfias, **Director**

Faculty

Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish*
Leo Chávez, Ph.D. Stanford University, *Professor of Anthropology*
Héctor L. Delgado, Ph.D. University of Michigan, *Assistant Professor of Chicano/Latino Studies and Sociology*
John Dombrink, Ph.D. University of California, Berkeley, *Professor of Social Ecology*
Raúl Fernández, Ph.D. Claremont Graduate School, *Professor of Social Sciences*
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, *Director of Chicano/Latino Studies and Professor of Anthropology*
Gilbert González, Ph.D. University of California, Los Angeles, *Professor of Social Sciences and Education*
Louis F. Mirón, Ph.D. Tulane University, *Chair of the Department of Education and Associate Professor of Education and Social Sciences*
Alejandro Morales, Ph.D. Rutgers University, *Professor of Spanish and Chicano/Latino Studies*
Arthur Rubel, Ph.D. University of North Carolina, *Professor Emeritus of Family Medicine*
Jacobo Sefamí, Ph.D. University of Texas at Austin, *Chair of the Department of Spanish and Portuguese and Associate 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*
Rodolfo D. Torres, Ph.D. Claremont Graduate School, *Associate Professor of Education*
Luis Villarreal, Ph.D. University of California, San Diego, *Professor of Biological Sciences and Neurology*

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

The minor requires completion of ten courses, at least five of which must be upper division. Required courses are:

Three-quarter core course in Chicano/Latino Studies: Social Science 61, 62, 63 (Introduction to Chicano/Latino Studies I, II, III).

A fourth-quarter core course, Social Science 168 (Chicano/Latino Research Seminar). This course satisfies the upper-division writing requirement when completed with a grade of C or better.

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 (Directed Group Study, when topic is on Chicano history); Social Science 167 (Chicano/Chicana Labor History), 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 in Mexico), 161B (Nineteenth-Century Mexico), 161C (Twentieth-Century Mexico), 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); Comparative Literature CL 9 (when topic is Chicano/Latino Literature), CL 105 (when topic is Chicano/Latino literature); English E 105 (when topic is Chicano/Latino literature); Social Science 175A (Literature and Ethnicity).

Two courses in topics related to Chicano/Latino Studies selected from: Anthropology 134E (Ways of Healing), 138Q (Latino Music: A View of Its Diversity and Strength); 138S (Music of Greater Mexico); Criminology, Law and Society J111 (Latinos and the Law); Education 124 (Multicultural Education in K–12 Schools); Environmental Analysis and Design E143U (Social Ecology of the Borderlands); Political Science 126A (Mexican-Americans and Politics), 126C (U.S. Immigration Policy), 129 (Special Topics in American Politics and Society, when topic is Chicano/Latino politics), 145B (U.S.–Mexican Relations); Psychology 174F (Chicano/Latino Psychology), 179 (when topic is Chicano Latino Families); Social Science 166 (Latino Social Movements and Organizations), 172D (Chicano Culture), 173G (Film Media and the Latino Community), 173I (Perspectives on the U.S.–Mexican Border), 173J (Chicano/Latino Experience: History, Society, and Culture in Autobiography), 173K-L (Comparative Latino Populations I, II), 196 (Field Studies in Multicultural Environment); Spanish 160 (Topics in Hispanic Film Studies); or other courses listed by the Chicano/Latino Studies program.

NOTE: Other courses may be selected for the minor with prior approval of the Director.

Residence Requirement: Other than the language requirement, no more than two courses taken at other academic institutions may be used toward satisfaction of the minor.

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 Conflict Resolution

721 Social Science Tower; (949) 824-6410
Wayne Sandholtz, **Director**

Faculty

Dennis Aigner, Ph.D. University of California, Berkeley, *Professor of Management and Economics*
Scott A. Bollens, Ph.D. University of North Carolina, *Chair of the Department of Urban and Regional Planning and Associate Professor of Social Ecology*
Peter A. Bowler, Ph.D. University of California, Irvine, *Director of the UCI Arboretum, UC Natural Reserve System Academic Coordinator, and Associate Adjunct Professor of Ecology and Evolutionary Biology and of Environmental Analysis and Design*
Teresa P. Caldeira, Ph.D. University of California, Berkeley, *Assistant Professor of Anthropology*
Russell Dalton, Ph.D. University of Michigan, *Director of the Center for the Study of Democracy and Professor of Political Science*
Joseph DiMento, Ph.D., J.D. University of Michigan, *Professor of Social Ecology and Management*
Paula Garb, Ph.D., U.S.S.R. Academy of Sciences, *Associate Director of Global Peace and Conflict Studies and Associate Adjunct Professor of Social Sciences and Social Ecology*
Michelle Garfinkel, Ph.D. Brown University, *Associate Professor of Economics*
John Graham, Ph.D. University of California, Berkeley, *Professor of Management*
Susan Greenhalgh, Ph.D. Columbia University, *Associate Professor of Anthropology*
Lawrence A. Howard, Ph.D. University of California, Irvine, *Lecturer in Social Sciences*
Karl Hufbauer, Ph.D. University of California, Berkeley, *Professor Emeritus of History*
Helen Ingram, Ph.D. Columbia University, *Professor of Social Ecology and Political Science, 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, *Professor of Physics*
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, *Director of the Program in Russian Studies and Associate Professor of History*
Julius Margolis, Ph.D. Harvard University, *Professor Emeritus of Economics*
Richard Matthew, Ph.D. Princeton University, *Assistant Professor of Social Ecology and Political Science*
William M. Maurer, Ph.D. Stanford University, *Assistant Professor of Anthropology*
Richard McCleary, Ph.D. Northwestern University, *Professor of Social Ecology*
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*
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, *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, *Department Chair and Professor of English and Comparative Literature*
Richard W. Perry, J.D. Stanford, Ph.D. University of California, Berkeley, *Assistant Professor of Social Ecology*
Shawn Rosenberg, M. Litt. University of Oxford, *Associate Professor of Political Science*
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, *Director of Global Peace and Conflict Studies and 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, *Director of the Critical Theory Institute and 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*
Stergios Skaperdas, Ph.D. The Johns Hopkins University, *Associate Professor of Economics*
David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Professor of Sociology and Social Ecology*
Etel Solingen, Ph.D. University of California, Los Angeles, *Professor of Political Science*
Alec Stone, Ph.D. University of Washington, *Professor of Political Science*
Rein Taagepera, Ph.D. University of Delaware, *Professor Emeritus of Political Science*
John Torpey, Ph.D. University of California, Berkeley, *Assistant Professor of Sociology*
John M. Whiteley, Ed.D. Harvard University, *Professor of Social Ecology*
Murray Wolfson, Ph.D. University of Wisconsin, *Adjunct Professor of Economics*

The minor in Conflict Resolution, sponsored by the IDP in Global Peace and Conflict Studies, is an interdisciplinary curriculum that can help students both discover and prepare themselves for professional careers. The course of study provides skills in conflict analysis and resolution and a useful understanding of integrative institutions at the local, regional, and international levels. Conflict plays a key role in all areas of our lives, and has placed a shaping role in the history of nations. It can have destructive or constructive potential. This program explores how conflict arises, how it is represented and discussed, how it is prevented, mitigated, managed, and used for change in interpersonal relations, within and between organizations and other kinds of groups inside nations, and in conflict between nations. The minor consists of seven four-unit courses and two two-unit courses.

Course descriptions are available in the academic unit sections of the *Catalogue*.

Requirements for the Minor

Three core courses: History 11 (Introduction to Peace and Conflict), Political Science 43D (Global Security and Cooperation), and Political Science 154G/Anthropology 136D (Conflict Management in Cross-Cultural Perspective).

Two relevant upper-division courses: These are examples of courses offered: Economics 148A-B (Political Economy of National Defense I, II); English and Comparative Literature CL 100 (The Literature of World War I, Imagining War and Peace), E 105 (The Literature of Modern War); Environmental Analysis and Design E100U (International Environmental Issues), E113, E114 (Social Ecology of Peace I, II); Environmental Analysis and

Design E105U/Criminology, Law and Society J128 (Environmental Law); History 190 (Multinationals and Tribes); Management 181 (Managing Organizational Behavior); Political Science 142G (U.S. Coercive Diplomacy), 143C (Arms Control and International Security); 147A (International Cooperation); Psychology and Social Behavior P175P (Violence in Society); Sociology 141 (Organizations), 178 (Sociology of Peace and War).

The GPACS Forum: Social Sciences/Social Ecology/Humanities 183A. Students attend forum lectures presented by scholars from a variety of institutions on topics related to peace, conflict, and global cooperation. The course must be taken twice and carries two units of credit, Pass/Not Pass only.

Senior Seminar in Conflict Resolution: Social Sciences/Social Ecology/Humanities 183B-C. Designed for seniors (juniors may also enroll) who are pursuing the minor in Conflict Resolution and/or the International Studies major. The courses provide a forum in which students refine skills and theory in the study of cooperation and conflict, from local to global arenas. Each course carries four units of credit. The second course (183C) confers upper-division writing credit when completed with a grade of C or better.

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

(949) 824-6495
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, *Associate Professor of Social Sciences*
William H. Batchelder, Ph.D. Stanford University, *Director of the Institute for Mathematical Behavioral Science and Professor of Cognitive Sciences*
Bruce M. Bennett, Ph.D. Columbia University, *Professor of Mathematics and Cognitive Sciences*
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 Cognitive Sciences and of Information and Computer Science*
Karl G. Hufbauer, Ph.D. University of California, Berkeley, *Professor Emeritus of History*
Mary-Louise Kean, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences and Linguistics*
John Leslie King, Ph.D. University of California, Irvine, *Professor of Information and Computer Science and of 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, *UCI Distinguished Professor Emeritus of Cognitive Sciences and Economics*
Penelope Maddy, Ph.D. Princeton University, *Professor of Social Sciences and Mathematics*
Robert May, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics and Philosophy*
Louis Narens, Ph.D. University of California, Los Angeles, *Professor of Cognitive Sciences*
Alan Nelson, Ph.D. University of Illinois at Chicago, *Department Chair and Professor of Philosophy*
Riley Newman, Ph.D. University of California, Berkeley, *Professor of Physics*
Robert Newsom, Ph.D. Columbia University, *Associate Dean of the Division of Undergraduate Education and 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 Minor in the History and Philosophy of Science and UCI Distinguished Professor of Social Sciences and Economics*
Norman M. Weinberger, Ph.D. Case Western Reserve University, *Professor of Biological Sciences and Cognitive Sciences*
Peter Woodruff, Ph.D. University of Pittsburgh, *Professor Emeritus of Philosophy*

The minor in the History and Philosophy of Science is intended for students who wish to study the history of science, the philosophical foundations of scientific inquiry, and the relationship between science and other fields. The history of science explores how science is actually done and how it has influenced history. This may involve tracking down an idea's source or its influences, evaluating the cultural forces at work in the generation of a scientific theory or the reaction of culture to science, or taking a detailed look at the work of a particular scientist or movement within science.

The philosophy of science is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences. Philosophy of science courses cover such topics as the role of logic and language in science and in mathematics, scientific explanation, evidence, and probability. These courses may also cover work that has been done on the philosophical problems in specific sciences—for example, the direction of time in physics, the model of mind in psychology, the structure of evolution theory in biology, and the implications of Gödel's incompleteness theorems for mathematics.

The minor is available to all UCI students. Course descriptions may be found in the academic 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: History 135A-F (History of Science and Medicine); Political Science 136B (History of Political Economy); Psychology 129 (when topic is History of Psychology).

Two courses selected from: Linguistics 141 (Topics in Philosophy of Language), 143 (Semantics), 152 (Linguistic Theories as Psychological Theories); Philosophy 106 (Topics in Mathematical Logic; also Social Science 106), 107 (Topics in Philosophical Logic), 108 (Topics in Inductive Logic), 140 (Topics in Philosophy of Science; also Social Science 130), 141A (Topics in Philosophy of Physics; also Social Science 131A), 142 (Writing/Philosophy of Biology; also Social Science 132), 143 (Topics in Philosophy of Psychology; also Social Science 135), 144 (Topics in Philosophy of Social Science; also Social Science 136), 145 (Topics in Philosophy of Language), 146 (Topics in Philosophy of Logic; also Social Science 133), 147B (Topics in Philosophy of Mathematics; also Social Science 134B), 148 (Philosophical Foundations of Probability).

Senior Seminar: Completion of Philosophy 149 (Senior Seminar in History and Philosophy of Science).

Graduate Program in Transportation Science

(949) 824-5989, -5906; Fax (949) 824-8385
Michael McNally, **Director**

Faculty

Marlon G. Boarnet, Ph.D. Princeton University, *Associate Professor of Social Ecology and Economics*
David Brownstone, Ph.D. University of California, Berkeley, *Associate Professor of Economics and Social Ecology*
Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Professor of Social Ecology and Management*
Gordon J. Fielding, Ph.D. University of California, Los Angeles, *Professor Emeritus of Social Sciences*
R. Jayakrishnan, Ph.D. University of Texas at Austin, *Associate Professor of Civil Engineering*
Charles Lave, Ph.D. Stanford University, *Professor of Economics*
Michael McNally, Ph.D. University of California, Irvine, *Director of Transportation Science and Associate Professor of Civil and Environmental Engineering*
Wilfred W. Recker, Ph.D. Carnegie-Mellon University, *Director of the Institute of Transportation Studies and Professor of Civil Engineering*
Amelia C. Regan, Ph.D. University of Texas, Austin, *Assistant Professor of Civil Engineering*
Stephen G. Ritchie, Ph.D. Cornell University, *Department Chair and Professor of Civil Engineering*
Kenneth A. Small, Ph.D. University of California, Berkeley, *Professor of Economics and Social Ecology*

Affiliated Faculty

Arthur S. DeVany, Ph.D. University of California, Los Angeles, *Professor of Economics*
Amihai Glazer, Ph.D. Yale University, *Professor of Economics and Social Ecology*
Raymond W. Novaco, Ph.D. Indiana University, *Professor of Social Ecology*
Luis Suarez-Villa, Ph.D. Cornell University, *Professor of Social Ecology*
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 collection, as well as special interlibrary loan arrangements with other University of California libraries including the Transportation Library at Berkeley. Research is coordinated with the Irvine branch of the Institute of Transportation Studies (ITS). 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 transportation systems (ITS), 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.*

ADDITIONAL OPPORTUNITIES FOR INTERDISCIPLINARY STUDY

Minor in Asian Studies

(949) 824-4929
R. Bin Wong, **Director**

Participating 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)
Chuansheng Chen, Ph.D. University of Michigan, *Associate Professor of Social Ecology* (cross-cultural psychology, socialization of achievement, adolescent development)
Chungmoo Choi, Ph.D. Indiana University, *Director of the Emphasis in Critical Theory and Associate Professor of Korean Culture* (modern Korea, post-colonial and colonial discourse, popular culture, anthropology)
Edward Fowler, Ph.D. University of California, Berkeley, *Professor of Japanese* (modern Japanese literature, cultural studies, film)
James Fujii, Ph.D. University of Chicago, *Associate Professor of Japanese* (modern Japanese literature; critical theory and cultural studies)
Naoki Fukui, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics*
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)
Susan Greenhalgh, Ph.D. Columbia University, *Associate Professor of Anthropology* (political economy, transnational studies, feminism/gender, China, Taiwan, Pacific Rim)
Judy C. Ho, Ph.D. Yale University, *Associate Professor of Art History* (Chinese art, critical theory)
Hu Ying, Ph.D. Princeton University, *Assistant Professor of Chinese* (narrative literature, translation theory, feminist theory)
C.-T. James Huang, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics* (syntax, semantics, structure of East Asian languages)

Martin W. Huang, Ph.D. Washington University, *Associate Professor of Chinese* (narrative theories and traditional Chinese fiction)
Kyung Hyun Kim, Ph.D. University of Southern California, *Assistant Professor of Korean Culture* (East Asian China, modern Korea, cultural theory)
Susan B. Klein, Ph.D. Cornell University, *Associate Professor of Japanese* (premodern and modern theater and dance, Japanese religions, feminist critical theory)
Jaewoo Lee, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Economics* (international economics, macroeconomics)
Karen Leonard, Ph.D. University of Wisconsin, *Professor of Anthropology* (social history of India, caste, ethnicity and gender, Asian-Americans in the United States)
Kenneth L. Pomeranz, Ph.D. Yale University, *Department Chair of History and Professor of History, East Asian Languages and Literatures, and Social Ecology* (modern Chinese)
David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Professor of Sociology and Social Ecology* (urbanization, comparative historical sociology, political sociology, world-system analysis)
Dorothy Solinger, Ph.D. Stanford University, *Professor of Political Science* (Chinese domestic politics and political economy, comparative politics, history of political philosophy)
Robert Uriu, Ph.D. Columbia University, *Assistant Professor of Political Science* (international relations, international political economy, Japanese political economy)
Anne Walthall, Ph.D. University of Chicago, *Professor of History and East Asian Languages and Literatures* (early modern and modern Japan)
Wang Feng, Ph.D. University of Michigan, *Associate Professor of Sociology* (demography, social change, economy and society)
Bert Winther-Tamaki, 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)
R. Bin Wong, Ph.D. Harvard University, *Director of the Minor in Asian Studies and Professor of History and of East Asian Languages and Literatures* (modern Chinese, comparative economic history)

The countries and cultures of Asia are significant participants in the world community. They present compellingly different models for social organization, historical development, and cultural commitments. The many countries of this large and complex region provide challenges and opportunities whether one plans to be a scholar, a business person, or a diplomat. The minor in Asian Studies draws upon the expertise of faculty throughout UCI to create opportunities for students to explore Asian topics in a variety of fields, to develop advanced language skills, and to acquire a broader perspective as they apply the disciplinary training of their major field to effective and informed studies of Asian subjects.

The minor is open to all UCI students. Course descriptions are available in the academic unit sections.

Requirements for the Minor

Students choose one country and language of specialization.

Requirements for the minor are met by taking eight courses (of which no more than four may be lower-division) as specified below:

A. One course selected from History 43A, 43B, or 43C (Pre-Modern East Asia, Modern China, Modern Japan).

B. Three quarters of course work in one Asian language of specialization beyond the first-year level. Approved courses are:

1. Second-, third- or fourth-year language: Chinese 2A-B-C, 3A-B-C, 101A-B-C; Japanese 2A-B-C, 3A-B-C, 101A-B-C; East Asian Languages and Literatures 2A-B-C, 3A-B-C, 101A-B-C. NOTE: These courses require placement examinations given by the Department of East Asian Languages and Literatures. Students who, for example, place out of Chinese 2B would then take Chinese 2C, 3A-B to meet the requirement.
2. Classical Chinese (Chinese 100A-B-C), *or* Classical Japanese (100A-B) plus a third quarter of Japanese language study.
3. Literature courses taught in the original language: Chinese 115, Japanese 115, East Asian Languages and Literatures 115, or graduate seminars. NOTE: These courses have a prerequisite of completion of the fourth-year language sequence or its equivalent.

C. Four additional courses selected from an approved list available in the Center for Asian Studies:

1. At least two of these courses must be taken in one (or more) department(s) other than the student's major department.
2. The courses must cover at least two different Asian countries, one of which will the the country of language specialization.
3. No more than two of the courses may be lower-division.

NOTE: A maximum overlap of four courses is permitted between this minor and a student's major.

Residence Requirement for the Asian Studies Minor: Four upper-division (or graduate) courses must be successfully completed at UCI.

Representative Courses: The following courses are representative of those appearing on the approved list: Anthropology 135H (Religion in South Asia), 138P (Music of Asia), 163H (State and Society in Contemporary China), 163K (Korean Society and Culture); Art History 42A, B, C (History of Western Art), 150 (Studies in Asian Art), 152 (Studies in Chinese Art and Religion), 153 (Studies in Early Chinese Painting), 154 (Studies in Later Chinese Painting), 159 (Japanese Buddhist Art), 161 (Studies in Early Japanese Painting), 162 (Studies in Later Japanese Painting); Chinese 100A-B-C (Classical Chinese), 115 (Chinese Literature: Advanced Texts), 180 (Topics in Chinese Literature); East Asian Languages and Literatures 55 (Introduction to East Asian Cultures), 110 (Topics in Chinese Literature and Society), 113 (Linguistic Structure of Chinese), 115 (Korean Literature: Advanced Texts), 117 (Topics in East Asian Philosophy), 120 (Topics in Japanese Literature and Society), 123 (Linguistic Structure of Japanese), 130 (Korean Society and Culture), 133 (Linguistic Structure of Korean), 150 (Cultural Studies in East Asia), 160 (East Asian Cinema), 180 (Topics in East Asian Literature); History 170A (Chinese History to 1800), 170B (Chinese History: 1800-1949), 170C (Chinese History: 1949-Present), History 171A (Age of the Samurai), 171B (Imperial Japan), 171C (Postwar Japan), 172 (Topics in Asian History), 173 (Topics in the Social History of Asia), 174 (Topics in the Cultural History of Asia), 175 (Topics in the Political and Economic History of Asia); Japanese 100A-B-C (Classical Japanese), 115 (Japanese Literature: Advanced Texts), 180 (Topics in Japanese Literature); Linguistics 165A (Linguistic Structure of Chinese), 165B (Linguistic Structure of Japanese), 165C (Linguistic Structure of Korean); Political Science 142C (International Relations of Japan), 151A (East Asian Politics), 151B (Introduction to Chinese Politics), 151C (Chinese Politics: Policy, Leadership, and Change), 151D (Japanese Politics: State and Economy in Modern Japan), 151E (Advanced Topics in Japanese Politics), 151F (Korean Politics and Society); Psychology and Social Behavior P124D (Human Development in Cross-Cultural Perspective); Sociology 77 (Social Change in East Asia), 175A (Korean Society and Culture), 175B (Comparative Societies: China), 175C (Japanese Society).

Minor in Global Sustainability

321 Steinhaus Hall; (949) 824-6006; Fax (949) 824-2181
Peter J. Bryant and Peter A. Bowler, **Co-directors**

Core Faculty

Peter A. Bowler, Ph.D. University of California, Irvine, *Director of the UCI Arboretum, UC Natural Reserve System Academic Coordinator, and Associate Adjunct Professor of Ecology and Evolutionary Biology and of Environmental Analysis and Design*
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. Reeburgh, Ph.D. The Johns Hopkins University, *Professor of Earth System Science*
Susan E. Trumbore, Ph.D. Columbia University, *Associate 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 65 (Biodiversity and 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: 55 (Introduction to Ecology), 94 (Patterns of Diversity, Ecology, and Evolution), 96 (Processes of Ecology and Evolution), 150 (Conservation Biology), 175 (Restoration Ecology), 178 (Ocean Ecology), 179 (Limnology and Freshwater Biology), 181 (Conservation in the American West), 186 (Population and Community Ecology).

Physical Sciences/Engineering: Earth System Science 20E (The Atmosphere), 20F (Oceanography); Engineering 20 (Energy and Society); Civil and Environmental Engineering CEE125 (Transportation Engineering), CEE126 (Transportation Systems Analysis and Design), CEE127 (Traffic Engineering); Physics 16 (Physics and Global Issues), 20C (Observational Astronomy).

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 and Design), E15 (Native American Religions and the Environmental Ethic), E105U (Environmental Law), E106 (Human Ecology), E146 (Dynamics of Human Populations), E154 (Environmental Ethics), E160 (Microbial Ecology of Natural and Polluted Waters); Economics 145E (Economics of the Environment); Political Science 149 (when topic is Global Environmental Politics); Social Science 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

Richard Perry, J.D. Stanford University, Ph.D. University of California, Berkeley, *Assistant Professor of Social Ecology*
Jaime E. Rodríguez, Ph.D. University of Texas, *Professor of History*
Gabriele Schwab, Ph.D. University of Konstanz, *Director of the Critical Theory Institute and Professor of English and Comparative Literature*
Tanis Thorne, Ph.D. University of California, Los Angeles, *Lecturer in History and Social Ecology*
Steven C. Topik, Ph.D. University of Texas, *Professor of History*

Affiliated Faculty

John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Director (Interim) of African-American Studies and Professor of English* (American literature, modern literature, critical theory, comparative literature)

The minor in Native American Studies is an interdisciplinary, interschool program which focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis. Study in the minor is enriched by the research and teaching interests of faculty from different departments.

The minor is open to all UCI students. Advising information is available from the undergraduate counseling offices in the Schools of Humanities, Social Ecology, and Social Sciences.

Course descriptions are available in the academic unit sections and on the World Wide Web at http://www.hnet.uci.edu/IDP/nativeam/indexhtml.

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), 135A (Religion and Social Order), 162A (Peoples and Cultures of Latin America); Art History

175 (Studies in Native and Tribal Art); Education 124 (Multicultural Education in K–12 Schools); History 161A (Indian and Colonial Societies in Mexico); Philosophy 131E (Race and Gender); Social Science 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: Anthropology 149 (Special Topics in Archaeology); Comparative Literature CL 105 (Multicultural Topics in Comparative Literature); English E 105 (Multicultural Topics in English-Language Literature); Sociology 149 (Special Topics: Structures), 169 (Special Topics: Age, Gender, Race, and Ethnicity).

Minor in Religious Studies

168 Humanities Instructional Building: (949) 824-8119
Susan B. Klein, **Director**

Participating Faculty

Stephen A. Barney, Ph.D. Harvard University, *Professor Emeritus of English*
Linda Freeman Bauer, Ph.D. Institute of Fine Arts, New York University, *Professor of Art History*
Luci Berkowitz, Ph.D. The Ohio State University, *Professor Emerita 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, *Department Chair and Professor of East Asian Languages and Literatures*
Yong Chen, Ph.D. Cornell University, *Associate Professor of History and Asian American Studies*
Chungmoo Choi, Ph.D. Indiana University, *Director of the Emphasis in Critical Theory and 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 and Department Chair and Associate Professor of Dance*
Edward Fowler, Ph.D. University of California, Berkeley, *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 Gelley, Ph.D. Yale University, *Professor of Comparative Literature*
Linda Georgianna, Ph.D. Columbia University, *Professor of English*
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, *Director of Religious Studies and Associate 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, *Professor of English*
Liisa Malkki, Ph.D. Harvard University, *Associate 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, *Department Chair and Professor of Philosophy*
Keith L. Nelson, Ph.D. University of California, Berkeley, *Professor of History*
Maria C. Pantelia, Ph.D. Ohio State University, *Associate Professor of Classics and Director, Thesaurus Linguae Graecae*
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, *Department Chair of History and Professor of History, East Asian Languages and Literatures, and Social Ecology*
Michael Ryan, Ph.D. University of Iowa, *Professor of English and Creative Writing*
Daniel J. Schroeter, Ph.D. University of Manchester, *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 Emeritus of Psychiatry and Human Behavior in Residence*
Victoria Silver, Ph.D. University of California, Los Angeles, *Associate Professor of English*
John H. Smith, Ph.D. Princeton University, *Department Chair (Acting) and Professor of German*
Daniel Stokols, Ph.D. University of North Carolina, *Professor of Social Ecology*
Ulrike Strasser, Ph.D. University of Minnesota, *Assistant Professor of History*
Timothy Tackett, Ph.D. Stanford University, *Professor of History*
Roger N. Walsh, M.B.B.S., Ph.D. University of Queensland (Australia), *Professor of Psychiatry and Human Behavior, Philosophy, and Anthropology*

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 Sciences, 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, 5B, 5C (World Religions I, II, III). 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 course 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 (Studies in Early Christian and Byzantine Art), 152 (Studies in Chinese Art and Religion); Classics 165 (New Testament Literature); East Asian 120 (when topic is Religion in Japanese Literature); English and Comparative Literature CL 103 (when topics are Jews and Muslims in Renaissance, Bible and Interpretation); History 110D (Topics in Medieval Europe: Heresy), 130B (Modern Jewish History), 135B (Science and Religion); Philosophy 123 (Topics in Philosophy of Religion); Women's Studies 150 (Feminist Cultural Studies: 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 (when topic is Religion, Women, Society).

A Two-Quarter Senior Seminar in Religious Studies: Humanities 105A-B, which includes the completion of a senior paper.

GRADUATE SCHOOL OF MANAGEMENT

David H. Blake, **Dean**

220 Graduate School of Management
Office of Admissions and Marketing: (949) 824-4622
Fax: (949) 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, *Professor of Management and Economics* (applied econometrics, statistics, operations research)

Lisa A. Barron, Ph.D. University of California, Los Angeles, *Assistant Professor of Management* (negotiation and communication, relationship between beliefs and behaviors, diversity and gender in organizations, intergroup relations)

Christine M. Beckman, Ph.D. Stanford University, *Assistant Professor of Management* (creation, transformation and influence of organizational relationships, organizational learning and change, entrepreneurship, diversity, women, and organizations)

Michael W. Berns, Ph.D. Cornell University, *Professor of Surgery, Cell Biology, Electrical and Computer Engineering, Ophthalmology, Radiology, and Management, and Arnold and Mabel Beckman Chair in Laser Biomedicine*

David H. Blake, Ph.D. Rutgers-The State University of New Jersey, *Dean of the Graduate School of Management and Professor of Management* (international business, business strategy, leadership)

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, *Associate Professor of Management and Economics* (economics of health care)

Reynold Byers, M.S. Brigham Young University, *Acting Assistant Professor of Management* (service operations management, financial service operations strategy, design and management of telephone centers, performance measurement in services)

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)

Paul Chwelos, Ph.D. University of British Columbia, *Assistant Professor of Management* (the management and economics of information technology and information systems)

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)

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, Economics, and Social Ecology, and Robert Gumbiner Chair in Health Care Management* (economics of health care)

Mary C. Gilly, Ph.D. University of Houston, *Professor of Management* (marketing management, marketing for nonprofit organizations, consumer behavior, services marketing)

Dan Givoly, Ph.D. New York University, *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, *Professor of Management and of Information and Computer Science* (information technology and business strategy; economics of information systems management; impact of information technology on organizations and market structure)

Joanna L. Ho, Ph.D. University of Texas at Austin, *Graduate School of Management Associate Dean of Academic Degree Programs and Associate Professor of Management* (auditing, accounting decisions, managers' investment decision analysis in multinational companies)

Philippe Jorion, Ph.D. University of Chicago, *Graduate School of Management Vice Dean and Professor of Management* (international finance)

L. Robin Keller, Ph.D. University of California, Los Angeles, *Associate Professor of Management* (decision analysis, risk analysis, problem structuring, management science)

Bradley L. Killaly, M.P.A. Princeton University, *Acting Assistant Professor of Management* (evolutionary economics with specific attention to the causes of firm change, organizational decision making, learning, and organizational ecology, the relationship between organizational experience and performance)

Kenneth L. Kraemer, Ph.D. University of Southern California, *Director of the Center for Research on Information Technology and Organizations, Professor of Management and of Information and Computer Science, and Taco Bell Chair in Information Technology Management* (organizational impacts of computing, management of computing, information technology and public policy)

Barbara A. Lougee, Ph.D. Cornell University, *Assistant Professor of Management* (financial reporting, compensation, corporate governance)

Dmitry Lukin, Ph.D. Insead (France), *Assistant Professor of Management* (corporate finance, information economics, market microstructure)

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 Economics, 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*

Peter Navarro, Ph.D. Harvard University, *Associate Professor of Management and Social Ecology* (electric utilities regulation, growth management, industrial policy, public policy)

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 and Social Ecology* (consumer behavior, advertising strategy, health care marketing, evaluation research)

Lyman W. Porter, Ph.D. Yale University, *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)

Claudia B. Schoonhoven, Ph.D. Stanford University, *Professor of Management* (organizational theory, strategic management of innovation and technology, entrepreneurship)

Carlton H. Scott, Ph.D. The University of New South Wales, *Professor of Management and of Electrical and Computer Engineering* (operations research, production management, total quality management, statistics)

Kut C. So, Ph.D. Stanford University, *Professor of Management* (operations management, design of production and inventory systems, operations research)

Jing-Sheng Song, Ph.D. Columbia University, *Associate 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)

Robert J. Town, Ph.D. University of Wisconsin-Madison, *Assistant Professor of Management and Economics* (industrial organization, health economics, applied econometrics)

Rajeev Tyagi, Ph.D. University of Pennsylvania, *Assistant Professor of Management* (new product introductions)

Alladi Venkatesh, Ph.D. Syracuse University, *Professor of Management and of Information and Computer Science* (market segmentation, sociology of consumption, marketing theory, and macromarketing)

James S. Wallace, Ph.D. University of Washington, *Assistant Professor of Management* (managerial and financial accounting, economics-based tax, capital markets)

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)

Fan Yu, Ph.D. Cornell University, *Assistant Professor of Management* (derivatives, risk management, asset pricing theory)

Xiaguo Zhu, Ph.D. Stanford University, *Assistant Professor of Management* (economics of information systems, investment in information technologies, electronic commerce, real options, competition in the IT industry)

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 Management. 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 Management is for those who wish to pursue a career in scholarly research.

Educational Objectives

The Graduate School of Management offers a generalist M.B.A. degree and a learning experience that prepares graduates for a lifetime of professional and personal growth with increasingly important enterprise-wide responsibilities. The rigorous curriculum, combined with extensive professional and interpersonal training and opportunities made available through the School's Career Services Office and Center for Leadership Development, allows students to gain theoretical perspectives that are in turn tested and affirmed with practical application. The result is an environment that fosters the development of professional and personal skills vital to contemporary executives or managers. Students are encouraged to develop their ability to lead change by mastering communication skills, to work productively and actively within a team-oriented environment, to gain a solid grasp of quantitative skills, and to appreciate and effectively employ those solutions that involve the integration and implementation of information and technology to offer creatively viable business options.

GSM has developed a strategic focus on Information Technology for Management (ITM), a theme that is incorporated in many areas of the curriculum. Although a solid grounding in basic business disciplines provides the foundation for effective management, GSM's graduates are encouraged to aim higher. They learn about change as it takes place within the context of a knowledge-based, technology-driven society where information and its effective use are vital to establishing a competitive edge. GSM students, whether they are interested in finance, marketing, general management, strategic planning, accounting, operations, health care, human resources, international business, or other areas, will be thoroughly imbued and comfortable with the nature, importance, and handling of information in all of these and other fields. Further, they will understand the technology and the technological processes that enable the gathering, analysis, dissemination, and use of information to change the way business is done. The strategic focus of the School is to provide skills that will enable its graduates to be effective managers who are not only proficient in business procedures but have the leadership qualities and know-how to affect change by transforming conventional business practices or perhaps even inventing new business processes and management techniques.

The Graduate School of Management has created an information-rich environment that cuts across all business disciplines by providing its students, faculty, and staff with technological tools that enable each member of the School to retrieve and analyze information that can be used to develop new processes or solve complex problems. Five ITM laboratories in the core disciplines are a critical part of the learning experience, and students' familiarity and ease with Information Technology for Management serve as backdrop for many other courses.

Additionally, GSM has also achieved a national reputation for excellence in graduate management education in the health care industry through the Health Care Executive M.B.A. (HCEMBA) program. Industry managers and health care professionals learn about managerial challenges and issues in the health care industry where hundreds of health care providers, medical device and instrumentation companies, and biosciences firms are headquartered. A joint M.D./M.B.A. program also is available.

General Admission Requirements

Evaluation of the applicant's file for admission to the Master's and Ph.D. degree programs will consist of an integrated assessment of all materials (test scores, transcripts of previous academic work, 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 600 for all M.B.A. programs. Substantive work experience is considered for applicants to M.B.A. programs.

Requests for application material should be addressed to the University of California, Irvine, Graduate School of Management, Office of Admissions and Marketing, 202 Graduate School of Management, Irvine, CA 92697-3125; e-mail: gsm-mba@uci.edu, or gsm-phd@gsm.uci.edu; World Wide Web: http://www.gsm.uci.edu/.

Doctor of Philosophy in Management

GSM admits students for the Ph.D. in the fall quarter only. The deadline for application is January 15. 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 Management to students with backgrounds in a variety of disciplines. While a master's degree is preferred, students may be admitted to the doctoral program directly from the baccalaureate degree. There are many appropriate undergraduate majors, including (but not limited to) psychology, political science, business or public administration, mathematics, computer sciences, economics, sociology, and so forth. Students with academic strengths in disciplines not usually considered as precursors for management (e.g., natural sciences, humanities, and the arts) are encouraged to apply. The Ph.D. program is designed to prepare students for academic careers in a number of the fields of management, e.g., organization and strategy, operations and decision technologies, management information systems, finance, accounting, and marketing. Requirements of the Ph.D. program include a broad knowledge of core management disciplines. In addition, the Ph.D. student must qualify as a skilled researcher and must complete a dissertation demonstrating these skills. 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.

Requests for information should be addressed to the University of California, Irvine, Graduate School of Management, Doctoral Program Admissions Office, 418 Graduate School of Management, Irvine, CA 92697-3125; e-mail: gsm-phd@ gsm.uci.edu; World Wide Web: http://www.gsm.uci.edu/doctoral/.

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, and three part-time M.B.A. programs: a 21-month Executive M.B.A. program, a two-year Health Care Executive M.B.A. program, a three-year Fully Employed M.B.A. program, and a five-year joint M.D./M.B.A. program offered in conjunction with the College of Medicine.

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 final deadline for completion of all phases of the application procedure is May 1. In addition to the general University rules governing admission to graduate study, GSM normally requires the following:

1. 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.

M.D./M.B.A. Joint Degree Program

The joint M.D./M.B.A. program requires five years for completion. It is aimed at individuals who are exceptional in ability and motivation and who seek a career as physicians with major responsibility for administration and management in health care organizations and institutions. Students in this program pursue a combined curriculum leading to an M.D. degree from the College of Medicine and an M.B.A. degree from the Graduate School of Management.

Students must be currently enrolled in the M.D. program in order to apply to the combined M.D./M.B.A. program. During their second or third year of medical school, interested students submit an application to the Graduate School of Management Admissions

Committee, after review by the College of Medicine. Final acceptance to the program is granted by the Graduate School of Management, and M.B.A. course work begins following completion of the student's third year of medical school. Students should be aware that enrollment in the M.D. program does not guarantee acceptance into the M.B.A. program.

The MCAT, along with the completion of three years of medical school training in good standing and passage of USMLE Step I, currently serve as a waiver for the GMAT entrance examination usually required for application to the M.B.A. program. The total number of units required to graduate for each program separately are satisfied in the M.D./M.B.A. joint program. Contact the M.D./M.B.A. Advisor at (949) 824-5388 for more information.

Special Opportunities

Within the M.B.A. program, GSM created an underlying curriculum in Information Technology for Management that provides students with sophisticated, state-of-the-art knowledge and practical experience in this rapidly evolving arena. Students take the customary M.B.A. core courses, augmented by a set of ITM application courses in various functional areas. In addition, many of the electives are specialized courses that reflect the changing nature of organizational management. Representative electives are: Network and Electronic Commerce, Management of Information Systems, Information Technology—Under the Hood, Information and Managerial Decision Making, Database Marketing, Marketing on the Internet, and Change Management. Additional activities designed to supplement this innovative curriculum include seminars given by industry leaders and relevant internships.

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 as we face the new millennium.

In today's interconnected global business world, it has become increasingly important for management students to learn to operate in an international environment. M.B.A. students in the full-time program can gain first-hand knowledge of the culture and management practices of other industrialized countries by participating in an academic exchange with universities located abroad. This experience, combined with 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; Budapest University of Economic Sciences (BUES), Budapest, Hungary; Vienna University of Economics and Business Administration, Wirtschafts Universitat, Wien, Vienna, Austria; ITESM (The Monterrey Institute of Technology and Higher Education), Monterrey, Mexico; Bocconi University, Milan, Italy; and Hong Kong University of Science and Technology, Kowloon, Hong Kong.

To complement the academic curriculum, a Consulting Practicum course provides practical application and work experience to selected GSM Master's students. The Consulting Practicum 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.

Opportunities for students to take part in ongoing research exist through the Center for Research on Information Technology and Organizations (CRITO), which was recently designated by the National Science Foundation (NSF) as one of six industry-University Information Research Centers in the United States. CRITO is a consortium of corporations working together with faculty at UCI and elsewhere to better understand the evolving fabric of the information society and its implications for the design, use, and management of information and technology in various user environments. These environments range from the individual user's environment to work-groups, organizations, social communities, and society. The aim is to determine how organizations can more effectively use information and better design and manage new technology for improving organizational performance and society more generally.

CRITO faculty associates are recognized internationally for their excellence in the study of information technology as it applies to complex organizations. This tradition of excellence has been established by faculty from the Graduate School of Management, the Department of Information and Computer Science, and the School of Social Sciences. These associates have collaborated since 1974 on theoretical and empirical research projects studying a broad array of questions about the relationship between information technology and organizational structure, society, political behavior, productivity, and performance. Research conducted through CRITO focuses on the management, use, and impact of information technology in the emerging global, competitive marketplace and the policy issues raised by such use. CRITO facilitates a match between the technical and organizational dimensions and between academic researchers and information technology professionals, and also assists organizations in exploiting the potential offered by information technology. CRITO's goals are to conduct theoretical and empirical research, bring multiple intellectual perspectives and methods to bear on interdisciplinary research, and facilitate the collaboration of faculty, students, and the professional community utilizing the expertise, facilities, and activities provided by CRITO. Qualified GSM students are encouraged to participate in the various CRITO research activities and to avail themselves of this unique opportunity to interact with scholars from allied disciplines and to study in-depth the effects of the information technology revolution.

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 students are provided with notebook computers 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 University of California, Irvine, Office of Admissions and Marketing, 202 Graduate School of Management, Irvine, CA 92697-3125; telephone (949) 824-4622; 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 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 week-long 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 University of California, Irvine, Office of Admissions and Marketing, 202 Graduate School of Management, Irvine, CA 92697-3125; telephone (949) 824-4622; World Wide Web: http://www.gsm.uci.edu/.

FULLY EMPLOYED M.B.A. PROGRAM

The Fully Employed M.B.A. (FEMBA) program gives emerging managers an opportunity to earn an M.B.A. degree with minimal disruption to their professional lives. Students attend classes each week on either Wednesday or Thursday evenings and a half day on Saturdays 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.

Further information may be obtained by contacting the University of California, Irvine, Office of Admissions and Marketing, 202 Graduate School of Management, Irvine, CA 92697-3125; telephone (949) 824-4622; World Wide Web: http://www.gsm.uci.edu/.

Undergraduate Minor in Management

The GSM faculty offer an undergraduate minor in Management which consists of seven courses: one lower-division introductory course and six upper-division courses.

In establishing the 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 management of organizations as a way of preparing for a career in business, (2) students preparing for careers in other fields that require some knowledge of management, and (3) students who expect to go on to graduate work in management who wish early guidance and undergraduate work appropriate to this career objective.

Students are eligible to apply for the minor in Management if they have completed all prerequisite courses (including Management 5) with a grade no lower than C (2.0) and have upper-division standing. Completion of the prerequisite courses does not guarantee admission to the minor in Management. Admission is on a competitive basis and students must submit an application, transcripts, and a statement of purpose. Applications are accepted on a quarterly basis. Interested students are encouraged to obtain further information from the GSM Student Affairs Office, 230 Graduate School of Management; World Wide Web: http://www.gsm.uci.edu/sitemap/programs/undergraduateminor.htm.

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 and Environmental Engineering CEE105, Economics 10A-B-C, Mathematics 7, Mathematics 131A-B-C, Psychology 10A-B-C, Social Ecology 13, Social Ecology 166A-B-C, Social Science 9A-B-C or 10A-B-C, or Sociology 10A-B-C.

Transfer students should check with their college counselor for established equivalencies for these prerequisite courses.

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 selection and feasibility assessment of information technology (IT), and application of IT to business and design and implementation of IT. Open only to students enrolled 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. Satisfactory/Unsatisfactory only.

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 of 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 Business and Government (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.

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.

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 ways that they grow.

220 Organizational Change (4). 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. Prerequisite: Management 202 or consent of instructor.

221 Methods of Organizational Research (4). Development of critical-analytical skills criticizing published research and theory. Necessary skills to design research effectively. Prerequisite: Management 202 or consent of instructor.

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.

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 financial analysis and decision making. Accounting measures are used to access economic characteristics of business organizations such as profitability and debt repayment ability. 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.

242 Portfolio Management (4). Advanced portfolio decision-making. Topics include index models, portfolio performance measures, bond portfolio management and interest immunization, stock market anomalies and market efficiency. Prerequisites: Management 201B, 209B.

243 Bonds and Fixed Income (4). Shows how to value instruments in the fixed-income market. Includes term structure modeling, bond portfolio dedication, and indexing. Also covers corporate bonds, mortgage-backed securities, and other interest rate derivatives. Prerequisite: Management 209B.

244 Multinational Finance (4). Focuses on financial issues facing multinational corporations, the most important of which is the management of foreign exchange risk. Other topics covered are investments and financing decisions in international capital markets. Prerequisites: Management 201B, 204B, 209A, 209B, or consent of instructor.

245 Financial Institutions (4). Focuses on financial intermediaries, particularly commercial banks. Explains the risks faced by banks in the lending process, off-balance sheet banking, securitization, deposit insurance, bank regulation, and the future of the financial services industry. Prerequisites: 201B, 204B, 209A, 209B.

248 Creating Wealth (4). Explores the creative decisions facing financial managers in the modern corporate environment. Situations studied include making strategic acquisitions, leveraged buyouts, competitive bidding, corporate restructuring, and other methods of shareholder value enhancement. Prerequisite: Management 209B.

249 Derivatives (4). Derivatives are securities, such as futures, forwards, swaps, and options, that are traded in relation to more basic underlying instruments, such as stocks, bonds, commodities, and currencies. Shows how to price derivatives and use them for hedging, speculating, and controlling financial risks. Prerequisites: Management 201B, 204B, 209A, 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.

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.

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 Valuing Cultural Diversity (4). Focuses on issues related to managing in a diverse workforce, i.e., gender, ethnicity, age. Students also have an opportunity to examine their own feelings, attitudes, and biases in the context of managing in a global 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.

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.

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). Modern technologies for computer networking provide new options for the management, acquisition, processing, and dissemination of information. These same technologies also create requirements for new organizational forms, management skills. Provides an overview of computer networking technology. 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 (2 to 4) F, W, S. Seminar, three hours. Each quarter a number of special topic seminars are offered in the 290 series. These seminars are not sequential and may be repeated for credit providing the topic varies. Examples of possible topics include Communication in Organizations, Power and Authority in Organizations, Health Care Administration, Real Estate Development. May be repeated for credit as topics vary.

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.

294 Special Topic ITM Seminars (2 to 4). Each quarter a number of special topic Information Technology for Management (ITM) seminars are offered in the 294 series. Examples of possible topics include: Supply Chain Management, Database Marketing, Marketing on the Internet. Open to Graduate School of Management students only. May be repeated for credit as topics vary.

295A Managerial Accounting Laboratory (2). Discusses how IT should (and should not) be used to support decision making. In each session the theme is "How can information technology be employed to permit professionals to achieve better decisions in real-world managerial accounting situations?" Corequisite: Management 203B.

295B Principles of Marketing Laboratory (2). Covers emerging trends in marketing information systems, focusing on Geographic Information Systems and Single Source Scanner Data Systems. Students obtain hands-on experience with elading software packages and market databases and learn pertinent concepts and analytical tools. Corequisite: Management 205.

295C Management Science Laboratory (2). Tightly integrated with Management 201B. Provides hands-on experience in setting up spreadsheet models and conducting experiments to aid decision making. Excel built-in tools are covered: Excel-Solver for optimization, Crystal Ball for simulation, and templates for queuing analysis. Corequisite: Management 201B.

295D Operations Management Laboratory (2). Several case studies are addressed using SAP R/3 logistics functionality to illustrate planning, procurement, and assembly functions within a typical production process. Students learn the role of IT in managing a firm's operations. Corequisite: Management 208.

295E Enterprise Modeling Laboratory (4). Using SAP as a frame of reference, familiarizes students with business modeling and system implementation tools. The course is a practicum giving students the opportunity to work with local firms on real problems under the direction of practicing consultants.

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.

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.

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 (2 to 12). Individual study under the direction of a selected faculty member. Prerequisite: determined by instructor.

EXECUTIVE M.B.A. PROGRAM

Admission to the Executive M.B.A. Program is a prerequisite for enrollment in 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 (5). Nature and purpose of accounting, principal accounting instruments, and valuation problems. Satisfactory/Unsatisfactory only.

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 (5). Principal determinants of national income and employment, with emphasis on concepts, tools, and data. Application of classical, Keynesian, and other models of 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 Technology for Management (5). 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.

EP209A Managerial Finance (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, and mergers.

EP209B Investments (5). Foundations of investment management. Utility and asset pricing theory, factor models, performance assessment, option pricing theory and mergers.

EP210 Business Strategy (5). Primarily a lecture-case study (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.

EP290A-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.

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 (3.7). Nature and purpose of accounting, principal accounting instruments, and valuation problems as they apply to health care organizations.

HC203B Managerial Accounting for Management (3.8). 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 (2.5). 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 Technology for Management (5). 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.

HC209A Managerial Finance (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, and mergers.

HC209B Investments (2.5). Foundations of investment management. Utility and asset pricing theory, factor models, performance assessment, option pricing theory, and mergers.

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.

HC295 Federal Policy in Health Care (7). National/international one-week residential course. Exploring political analysis as related to management of health care organizations. Topics include political environment of management, concepts, and processes central to political analysis, bureaucratic politics, politics, and the manager. Satisfactory/Unsatisfactory only.

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.

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 terms, techniques, and institutions in marketing environments, acquainting students with the type of decisions made by marketing managers, and the factors influencing these decisions.

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 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.

FE208 Operations Management (4). Introduction to strategic and tactical issues in production and operations management. A blend of quantitative and qualitative considerations. Topics: product planning, process design, capacity management, production planning, inventory control, distribution management, just-in-time manufacturing, quality management.

FE209A Managerial Finance (4). 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, and mergers.

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

Ronald J. Stern, **Dean**

180 Rowland Hall
Academic Counseling: (949) 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.

DEGREES

Chemistry	B.S., M.S., Ph.D.
Earth and Environmental Sciences	B.S.
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 51). 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. Students who wish to complete a coordinated set of courses beyond the introductory level in Mathematics and in Earth and Atmospheric Sciences may pursue minors in these areas. Introductory courses in chemistry, mathematics, and physics meet the needs of students majoring in the sciences, mathematics, and engineering and are also appropriate for students in other disciplines who seek a rigorous introduction to the physical sciences. In addition, a number of courses within the School have few or no prerequisites and are directed particularly toward students majoring in areas remote from the sciences.

PLANNING A PROGRAM OF STUDY

Students who choose a major in the School of Physical Sciences have a variety of academic advising and counseling resources available to them. In addition to faculty advisors, there is a Chief Academic Advisor in each department who is responsible for interpreting degree requirements, reviewing student petitions, and assisting with special advising problems. An academic advising and counseling staff, employed in the Associate Dean's Office, is available to serve a broad range of student advising needs. In consultation with their faculty advisor or an academic counselor, students should plan a course of study leading to a major in one of the departments of the School. In carrying out this major, students may often concentrate very heavily in a second department within the School or in some other school. Occasionally students choose to pursue a double major. Permission to do so may be sought by a petition submitted to the Office of the Associate Dean of Physical Sciences.

All initial courses of study for majors include mathematics through calculus, and calculus is a prerequisite for much of the upper-division work in each major. A student interested in any of the physical sciences should continue mathematical training beyond these prerequisite courses. Furthermore, students interested in either physics or chemistry usually will include work in both of these subjects in their undergraduate careers.

Students in the physical sciences are urged to acquire a working knowledge of computer programming at an early stage of their University studies. This can be accomplished by taking Information and Computer Science 21, Chemistry 5, Engineering E10, CEE10, MAE10, ECE11, or Physics 53.

CAREER OPPORTUNITIES

The majority of graduates continue their education beyond the Bachelor's degree level. Many pursue advanced academic degrees in preparation for careers in scientific or medical research, engineering, or postsecondary education. Other students will complete a secondary education credential in order to prepare for careers teaching high school mathematics and science. Some students enter professional school in areas such as medicine, dentistry, law, or business administration. Students who choose not to continue their studies beyond the baccalaureate level most frequently find employment in private business or industry. In addition to technical areas directly related to their major fields of study, students often enter careers in less obviously related fields such as computing, systems analysis, engineering, journalism, marketing, or sales.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

SPECIAL PROGRAMS

Preparation for Teaching Science and Mathematics

Students interested in teaching science and mathematics should consider the programs in science and mathematics education offered by the Departments of Chemistry, Mathematics, and

Physics and Astronomy. The concentration in Chemistry Education, the Mathematics specialization in High School Teaching, and the concentration in Physics Education each provide strong grounding in the fundamentals of one discipline. At the same time, these programs emphasize the breadth in natural sciences needed to satisfy the requirements for the secondary teaching credential during the mandatory year of study following award of the B.S. degree. Each department's curriculum includes specialized instruction in effective methods of science teaching and provides opportunities for practical fieldwork experiences in a secondary school classroom. Detailed requirements for each program are provided in the departmental sections.

Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; telephone (949) 824-5461; e-mail: honors@uci.edu; World Wide Web: http://www.honors.uci.edu/.

Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. See the Center for International Education section for additional information.

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.

Minor in Biomedical Engineering

The minor in Biomedical Engineering is an interdisciplinary curriculum that includes courses from the Schools of Engineering, Physical Sciences, and Biological Sciences. The minor is designed to provide a student in the physical sciences with the introductory skills needed in the quantitative biomedical arena. See the School of Engineering section of the *Catalogue* for more information.

Minor in Conflict Resolution

The interdisciplinary minor in Conflict Resolution provides skills in conflict analysis and resolution and a useful understanding of integrative institutions at the local, regional, and international levels. See the Interdisciplinary Studies section of the *Catalogue* for more information.

Minor in Global Sustainability

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section of the *Catalogue* for more information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

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 Rowland Hall; (949) 824-6018
A. Richard Chamberlin, **Department Chair**

Faculty

V. Ara Apkarian, Ph.D. Northwestern University, *Professor of Chemistry* (chemical physics)
Ramesh D. Arasasingham, Ph.D. University of California, Davis, *Lecturer in Chemistry* (chemical education and inorganic chemistry)
Thorsten Benter, Ph.D. University of Kiel, *Assistant Professor of Chemistry* (atmospheric, physical, and analytical chemistry)
Donald R. Blake, Ph.D. University of California, Irvine, *Professor of Chemistry and Earth System Science* (atmospheric and analytical chemistry, and radiochemistry)
Vladimir E. Bondybey, Ph.D. University of California, Berkeley, *Adjunct 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, *Department Chair and Professor of Chemistry* (organic synthesis and bioorganic chemistry)
Ralph J. Cicerone, Ph.D. University of Illinois, *Chancellor, Professor of Earth System Science and Chemistry, and Daniel G. Aldrich Jr. Chair* (atmospheric and analytical 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 and analytical chemistry)
Frank J. Feher, Ph.D. University of Rochester, *Department Vice Chair and Professor of Chemistry* (organometallic and inorganic chemistry)
Barbara J. Finlayson-Pitts, Ph.D. University of California, Riverside, *Professor of Chemistry* (atmospheric, physical, and analytical 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. University of California, Berkeley, *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 Emeritus of Chemistry* (theoretical chemistry)
John C. Hemminger, Ph.D. Harvard University, *Professor of Chemistry* (surface chemistry and physics, atmospheric and analytical chemistry)
Wilson Ho, Ph.D. University of Pennsylvania, *Professor of Physics and Chemistry, and Bren Chair* (experimental condensed matter physics and chemistry)
Bo Hong, Ph.D. Texas A & M University, *Assistant Professor of Chemistry* (inorganic and analytical chemistry)
Kenneth C. Janda, Ph.D. Harvard University, *Professor of Chemistry* (chemical physics, spectroscopy, and analytical chemistry)
Jhong K. Kim, Ph.D. University of California, Santa Cruz, *Senior Lecturer in Chemistry* (organic chemistry)
Vladimir A. Mandelshtam, Ph.D. Institute of Spectroscopy, Academy of Sciences of the U.S.S.R., *Assistant Professor of Chemistry* (theoretical and computational chemistry)
Craig C. Martens, Ph.D. Cornell University, *Department Vice Chair and 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 and analytical chemistry, and chemical education)
Harold W. Moore, Ph.D. University of Illinois, *Research Professor of Chemistry* (organic chemistry and rational drug design)
James S. Nowick, Ph.D. Massachusetts Institute of Technology, *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, *Professor of Chemistry* (analytical chemistry)

Peter M. Rentzepis, Ph.D. Cambridge University, *Professor of Chemistry and Ophthalmology, and UC Presidential Chair* (physical chemistry and picosecond spectroscopy)
Patricia J. Rogers, Ph.D. University of California, Irvine, *Senior 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 and analytical chemistry, and radiochemistry)
Scott D. Rychnovsky, Ph.D. Columbia University, *Professor of Chemistry* (organic chemistry)
A. J. Shaka, Ph.D. Oxford University, *Professor of Chemistry* (physical and analytical chemistry)
Kenneth J. Shea, Ph.D. Pennsylvania State University, *Professor of Chemistry* (organic, polymer, and analytical chemistry)
Mare Taagepera, Ph.D. University of Pennsylvania, *Senior Lecturer Emerita in Chemistry* (physical organic chemistry and chemical education)
Douglas J. Tobias, Ph.D. Carnegie Mellon University, *Assistant Professor of Chemistry* (computational biophysical 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 (or the Honors sequence Chemistry H2A-B-C) is prerequisite to all study in the Department at more advanced levels. The subject matter of this course serves also as a thorough introduction to the varied aspects of modern chemistry for students who do not wish to pursue their studies beyond the introductory level.

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 Program Office, 248/250 Rowland Hall.

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 Chemistry majors are encouraged to acquire this competence.

Chemistry majors who are interested in teaching chemistry at the secondary level are urged to consider completing the optional concentration in Chemistry Education. A two-year post-baccalaureate program 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 54–59.

School Requirements: None.

Departmental Requirements

Basic Requirements: Mathematics 2A-B-C, Physics 7B-D-E (or 5A-B-C) and 7LB-LD (or 5LB-LC) Chemistry 1A-B-C (or H2A-2B-2C) and 1LB-LC, Chemistry 5, Chemistry 52A-B-C and 52LA-LB-LC (or 51A-B-C and 51LA-LB-LC), Chemistry 107 and 107L, Chemistry 131A-B-C (or 130A-B-C), Chemistry 151 and 151L.

Elective Requirements: At least four lecture courses selected from Chemistry 125, 127, 128, 135, 136, 137; Biological Sciences 98 (Biochemistry), 99 (Molecular Biology), 114 (Advanced Biochemistry), 116 (Advanced Molecular Biology); Earth System Science 101A-B-C (Earth Systems I-II-III), 112 (Atmospheric Dynamics), 160 (Physical Oceanography); Physics 111A-B (Classical Mechanics), 112A-B (Electromagnetic Theory); Engineering ChE120A (Momentum Transfer), ChE120B (Heat and Mass Transfer), ChE122 (Separation Processes), ChE160 (Reaction Kinetics and Reactor Design), ChE162 (Chemical Engineering Design), ChE163 (Chemical Process Control), ChE165 (Introduction to Biochemical Engineering), CEE164/164L (Chemistry for Environmental Engineering), CEE165 (Physical-Chemical Processes).

At least three laboratory courses chosen from Biological Sciences 114L (Biochemistry Laboratory), 116L (Molecular Biology Laboratory), Chemistry 128L (Introduction to Chemical Biology Laboratory Techniques), 152 (Advanced Analytical Chemistry), 153 (Physical Chemistry Laboratory), 156 (Advanced Laboratory in Chemistry and Synthesis of Materials), 160 (Organic Synthesis Laboratory), 170 (Radioisotope Techniques), 180 (Undergraduate Research), Engineering ChE120LA-LB (Chemical Engineering Laboratory), Physics 120 (Electronics for Scientists), and 121 (Advanced Laboratory). (Chemistry 180 can be counted toward this requirement no more than once.)

At least four of the courses used to satisfy the Elective Requirement must be courses offered by the Chemistry Department.

Optional American Chemical Society Certification: For ACS Certification the program must include Biological Sciences 98; Chemistry 127, 152, 153; and at least two courses chosen from Mathematics 2D, 2E, 3A, and 3D.

Optional Concentration in Biochemistry: The program must include Biological Sciences 97, 98, 99; Chemistry 128, 128L; and three advanced biology electives chosen from: Biological Sciences 108, 109, 110, 111L, 112L, 114, 114L, 116, 116L, 121, 121L, 122, 122L, 124, 124L, 128, 130A, 130B, 132, 137A, 137B, 140, 144A, 144B, 144C, and 147.

Optional Concentration in Chemistry Education: The program must include Education 173 (or 176), Physical Sciences 114 (two quarters), and three science breadth electives offered by one department from the following list: Earth System Science 101A, 101B, 101C, 112, 120, 160; Mathematics 2D, 2E, 3A, 3D, 7; Physics 20A, 51A, 51B. One quarter of Physical Sciences 114 can be replaced by one quarter of Chemistry 191 or 192. The Chemistry elective requirement is reduced for students in this concentration to three lecture courses and two laboratory courses. Of these, three must be courses offered by the Chemistry Department.

HONORS PROGRAM IN CHEMISTRY

The Honors Program in Chemistry is a research-based program offered to selected Chemistry majors during their final year. Applicants to the program must have completed their junior year with a grade point average of at least 3.3 overall and in their Chemistry courses. They must also have demonstrated the potential of carrying out research of honors quality, as judged by the Chemistry faculty member who will supervise their research. Students in this program enroll in Honors Research in Chemistry (Chemistry H180A-B-C) throughout their senior year and submit a formal thesis late in the spring quarter. They also enroll in the Honors Seminar in Chemistry (Chemistry H181), in which they receive instruction in scientific writing and present a formal research seminar. Successful completion of Chemistry H181 satisfies the UCI upper-division writing requirement.

Students who complete these requirements, whose grade point average remains above the 3.3 standard, and whose research is judged to be of honors quality will graduate with Departmental Honors in Chemistry.

The Department also offers an Honors General Chemistry sequence, H2A-B-C. This course in general chemistry is designed for members of the Campuswide Honors Program (CHP) and other highly qualified students. It covers the same material as Chemistry 1A-B-C, but in greater depth.

Additional information is available from the Chemistry Undergraduate Program Office.

PLANNING A PROGRAM OF STUDY

The departmental requirements leave the student a great deal of latitude in choice of courses; the student can choose to pursue interests ranging from biochemistry on the one hand to chemical physics on the other. Many of the basic requirements above coincide with those of the School of Biological Sciences. For this reason a double major in Chemistry and Biological Sciences is popular. The Department is approved by the American Chemical Society to offer an undergraduate degree certified by the Society as suitable background for a career in chemistry or for graduate study in chemistry. While it is not mandatory, it is desirable for students to pursue a course of study that the Department judges to merit a certified degree. Specifically, the following courses must be included in the program of study: Biological Sciences 98; two courses from Mathematics 2D-E, 3A, 3D; Chemistry 127, 152, and 153. 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 or H2A-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 7 (or 5) 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.

In the junior year all Chemistry majors should enroll in a year sequence of physical chemistry and in Chemistry 151/151L (fall), 107 (winter), and 107L (spring). Chemistry 130A-B-C and 131A-B-C are equivalent courses in physical chemistry. They have the same prerequisites and expect the same level of chemical and mathematical rigor. Both are acceptable to satisfy the physical chemistry requirement for the major. Chemistry 131A-B-C develops the topic beginning from a molecular or microscopic point of view and proceeds to the macroscopic description of matter; applications may address primarily gas phase systems. Chemistry 130A-B-C, on the other hand, commences with the macroscopic description; this approach may be of particular interest for applications of physical chemistry in biology, materials science, and engineering. Students should choose between the two courses on the basis of their interests. Because of significant differences in the sequence of topics, students starting in one series may not switch to the other in subsequent quarters.

During the junior and senior years the Chemistry Department electives requirement should be fulfilled, as should other University and departmental requirements.

Sample programs for Chemistry majors, American Chemical Society-certified Chemistry majors, the Biochemistry concentration, the Chemistry Education concentration, and Chemistry-Biological Sciences double majors are shown in the accompanying charts. Sample programs for Chemistry majors wishing to emphasize chemical physics, computational or theoretical chemistry, chemical synthesis and reactivity, or materials or polymer science in their undergraduate programs are available from the Chemistry Undergraduate Program Office, 248/250 Rowland Hall.

The faculty encourages Chemistry majors to enhance their education by studying abroad for one or more quarters, or during the summer. In most cases, the Chemistry EAP advisor can help students plan a program of study that will not extend the time it takes to graduate. Also, study abroad can enhance students' applications for admission to graduate and professional schools. For more information about opportunities to study abroad, see the Center for International Education section of this *Catalogue* or visit the Physical Sciences Student Affairs Office.

Sample Program — Chemistry Majors*
Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
Freshman		
Chemistry 1A (H2A)	Chemistry 1B, 1LB (H2B, 1LB)	Chemistry 1C, 1LC (H2C, 1LC)
Mathematics 2A	Mathematics 2B	Mathematics 2C
Breadth (Freshman Writing)	Breadth (Freshman Writing)	Breadth
Breadth		
Sophomore		
Chem. 52A, 52LA (51A, 51LA)	Chem. 52B, 52LB (51B, 51LB)	Chem. 52C, 52LC (51C, 51LC)
Chemistry 5	Physics 7B, 7LB	Physics 7D, 7LD
Physics 7A, 7LA	Breadth	Breadth
Junior		
Chem. 131A (130A)	Chem. 131B (130B)	Chem. 131C (130C)
Physics 7E	Chemistry 107	Chemistry 107L
Chemistry 151, 151L	Chemistry Elective	Chemistry Elective
	Breadth/Elective	Breadth/Elective
Senior		
Chemistry Elective	Chemistry Elective	Chemistry Elective
Chemistry Elective	Chemistry Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective

* For American Chemical Society certification include two courses selected from Biological Sciences 98; Mathematics 2D–E, 3A, and 3D; include Chemistry 127, 152, and 153.

Sample Program — Concentration in Biochemistry
Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
Freshman		
Chemistry 1A (H2A)	Chemistry 1B, 1LB (H2B)	Chemistry 1C, 1LC (H2C)
Mathematics 2A	Mathematics 2B	Mathematics 2C
Breadth (Freshman Writing)	Breadth (Freshman Writing)	Breadth
Breadth		
Sophomore		
Chem. 52A, 52LA (51A, 51LA)	Chem. 52B, 52LB (51B, 51LB)	Chem. 52C, 52LC (51C, 51LC)
Chemistry 5	Physics 7B, 7LB	Physics 7D, 7LD
Physics 7A, 7LA	Biological Sciences 98	Biological Sciences 99
Biological Sciences 97		
Junior		
Chem. 130A (131A)	Chemistry 130B (131B)	Chemistry 130C
Physics 7E	Chemistry 107	Chemistry 107L
Chemistry 151, 151L	Chemistry 128	Chemistry 128L
	Breadth/Elective	Breadth/Elective
Senior		
Chemistry Elective	Chemistry Elective	Chemistry Elective
Advanced Bio. Elective	Advanced Bio. Elective	Advanced Bio. Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective

Sample Program — Concentration in Chemistry Education
Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
Freshman		
Chemistry 1A (H2A)	Chemistry 1B, 1LB (H2B)	Chemistry 1C, 1LC (H2C)
Mathematics 2A	Mathematics 2B	Mathematics 2C
Breadth (Freshman Writing)	Breadth (Freshman Writing)	Breadth
Breadth		
Sophomore		
Chem. 52A, 52LA (51A, 51LA)	Chem. 52B, 52LB (51B, 51LB)	Chem. 52C, 52LC (51C, 51LC)
Chemistry 5	Physics 7B, 7LB	Physics 7D, 7LD
Physics 7A, 7LA	Breadth	Breadth
Breadth		
Junior		
Chem. 131A (130A)	Chem. 131B (130B)	Chem. 131C (130C)
Physics 7E	Chemistry 107	Chemistry 107L
Chemistry 151, 151L	Chemistry Elective	Chemistry Elective
	Breadth/Elective	Breadth/Elective
Senior		
Chemistry Elective	Chemistry Elective	Chemistry Elective
Education 173 (176)	Physical Sciences 114	Physical Sciences 114
Science Breadth Elective	(Chem. 191 or 192)	(Chem. 191 or 192)
Breadth/Elective	Science Breadth Elective	Science Breadth Elective
	Breadth/Elective	Breadth/Elective

Sample Program — Chemistry–Biological Sciences Double Majors
Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
Freshman		
Chemistry 1A (H2A)	Chemistry 1B, 1LB (H2B)	Chemistry 1C, 1LC (H2C)
Mathematics 2A	Mathematics 2B	Mathematics 2C
Breadth (Freshman Writing)	Biological Sciences 94	Biological Sciences 96
Breadth	Breadth (Freshman Writing)	Breadth
Sophomore		
Chem. 52A, 52LA (51A, 51LA)	Chem. 52B, 52LB (51B, 51LB)	Chem. 52C, 52LC (51C, 51LC)
Chemistry 5	Physics 7B, 7LB	Physics 7D, 7LD
Physics 7A, 7LA	Biological Sciences 98	Biological Sciences 99
Biological Sciences 97	Breadth/Elective	Breadth/Elective
Junior		
Chem. 130A (131A)	Chem. 130B (131B)	Chem. 130C (131C)
Physics 7E	Chemistry 107	Chemistry 107L
Chemistry 151, 151L	Bio. Sci. Core	Bio. Sci. Core
Breadth/Elective	Bio. Sci. 100L	Bio. Sci. Lab
Senior		
Chemistry Elective	Chemistry Elective	Chemistry Elective
Bio. Sci. Core	Bio. Sci. Satellite	Chemistry Elective
Bio. Sci. Lab	Bio. Sci. Core	Bio. Sci. Lab
Breadth/Elective	Breadth/Elective	Breadth/Elective

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 and a comprehensive oral examination (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 (Non-Thesis) program requires that the student complete 10 graduate-level chemistry courses (or 40 units) and a comprehensive oral examination. Graduate students are expected to attain grades of B or better to remain in good academic standing.

Progress toward the Ph.D. degree during the first year is assessed by a written examination administered after completion of the first year of study. This examination covers either research accomplishments during the first year or comprehensive knowledge acquired in course work. The time and content of the examination depends upon the student's specific area of interest.

Training in teaching is an integral part of each graduate program, and all graduate degree candidates are expected to participate in the teaching program for at least four quarters during their graduate career.

Participants in the Ph.D. program take an oral examination for formal Advancement to Candidacy. This examination 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 CHEMICAL AND MATERIALS PHYSICS

This is an interdisciplinary program between condensed matter physics and physical chemistry which is designed to eliminate the barrier between these two disciplines. Students with B.S. degrees in Physics, Chemistry, or Materials Science and Engineering, are encouraged to apply to the program. The goal of the concentration in Chemical and Materials Physics (ChaMP) is to provide students with a broad interdisciplinary education in the applied physical sciences that emphasizes modern laboratory and computational skills. The program accepts students for both the M.S. and the Ph.D. degrees. Upon admission to the program, students are assigned two faculty advisors, one from the Department of Physics and Astronomy, and one from the Department of Chemistry, to provide guidance on curriculum and career planning.

The curriculum for the M.S. program includes a summer session to assimilate students with different undergraduate backgrounds; formal shop, laboratory, and computational courses; a sequence on current topics to bridge the gap between fundamental principles and applied technology; and a course to develop communication skills. The core courses are: Chemistry 206, 213, 226, 228, 230, 231A-B-C, 232A-B-C, 236, 266; Physics 213C, 229A-B, 273. In addition to the core, M.S. students complete four electives approved by the student's Advisory Committee and a master's thesis. The M.S. program prepares students to compete for high-tech jobs or to begin research leading to a Ph.D.

Successful completion of the M.S. degree requirements qualifies students for the Ph.D. program. A candidacy examination consisting of an original research proposal and a research progress report is expected to be completed within a year of starting the Ph.D. program.

CONCENTRATION IN PROTEIN ENGINEERING SCIENCE

Several faculty in the Department of Chemistry, in conjunction with faculty in the School of Biological Sciences and the Henry Samueli 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 (Non-Thesis 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.

Satisfactory completion of a comprehensive oral examination.

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 second-year Examination requirement.

Completion of the Oral Examination requirement for Advancement to Candidacy.

Completion of the teaching requirement.

Completion of six quarters in residence at UCI.

Submission of an acceptable doctoral dissertation.

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 (4-4-4); 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-LC General Chemistry Laboratory (2-2); 1LB (W, S), 1LC (S, Summer, F). Discussion, one hour; laboratory, four hours. Training and experience in basic laboratory techniques. Chemical practice and principles illustrated through experiments related to lecture topics in Chemistry 1A-B-C. Corequisite for Chemistry 1LB and 1LC: concurrent enrollment in the corresponding segment of Chemistry 1. Prerequisite for Chemistry 1LB: a grade of C- or better in Chemistry 1A or Chemistry 1A and 1LA. Prerequisite for Chemistry 1LC: a grade of C- or better 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)**

5 Scientific Computing Skills (4). Lecture, three hours; laboratory, two hours. Introduces students to the personal computing software used by chemists for managing and processing of data sets, plotting of graphs, symbolic and numerical manipulation of mathematical equations, and representing chemical reactions and chemical formulas. Corequisites: Chemistry 1C and Mathematics 2C. Prerequisites: Chemistry 1A-B and Mathematics 2A-B.

51A-B-C Organic Chemistry (4-4-4); 51A (F, W, Summer), 51B (W, S, Summer), 51C (S, Summer, F). Lecture, three hours; discussion, one hour. Fundamental concepts relating to carbon compounds with emphasis on structural theory and the nature of chemical bonding, stereochemistry, reaction mechanisms, and spectroscopic, physical, and chemical properties of the principal classes of carbon compounds. Corequisite for 51A-B: concurrent enrollment in the corresponding segment of Chemistry 51L. Prerequisites for 51A: Chemistry 1A-B-C and 1LB-1LC. Prerequisites for 51B and 51C: a grade of C- or better in previous quarter of sequence. Chemistry 51A-B-C and Chemistry 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). Discussion, one hour; laboratory, four hours. Modern techniques of organic chemistry, using selected experiments to illustrate topics introduced in Chemistry 51A-B-C. Corequisite for 51LA-LB-LC: concurrent enrollment in the corresponding segment of Chemistry 51. Prerequisites for 51LB: a grade of C- or better in Chemistry 51A and 51LA. Prerequisites for 51LC: a grade of C- or better in Chemistry 51B and 51LB.

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: a grade of C- or better 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. Discussion, one hour; 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: a grade of C- or better in Chemistry 52A and 52LA. For 52LC: a grade of C- or better in Chemistry 52B and 52LB.

H90 The Idiom and Practice of Science (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 thermodynamics, chemical equilibria, acid-base chemistry, kinetics, states of matter, electronic structure of atoms and the periodic table, chemical bonding, spectroscopy, and topics from organic, atmospheric, and biochemistry. Open only to members of the Campuswide Honors Program or consent of instructor. Formerly Chemistry H90A. **(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 (3) 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.

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. Prerequisite: Chemistry 107.

128 Introduction to Chemical Biology (4) W. Lecture, three hours; discussion, one hour. Introduction to the basic principles of chemical biology: structures and reactivity; chemical mechanisms of enzyme catalysis; chemistry of signaling, biosynthesis, and metabolic pathways. Prerequisites: Chemistry 1A-B-C; Chemistry 51A-B-C or 52A-B-C.

128L Introduction to Chemical Biology Laboratory Techniques (4) S. Discussion, one hour; laboratory, six hours. Introduction to the basic laboratory techniques of chemical biology: electrophoresis, plasmid preparation, PCR, protein expression, isolation, and kinetics. Prerequisite: Chemistry 128.

NOTE: Chemistry 130A-B-C and 131A-B-C are parallel courses in physical chemistry; both are acceptable to satisfy the physical chemistry requirements for the major. Because of significant differences in course content, students starting in one series may not switch to the other in subsequent quarters.

130A-B-C Physical Chemistry: Biological and Materials Applications. Lecture, three hours; discussion, one hour.

130A Chemical Thermodynamics (4) F. Principles of chemical and heterogeneous equilibrium. Multiple chemical equilibrium, electrochemical equilibria, and equilibria at phase boundaries. Corequisite: Physics 5C. Prerequisites: Chemistry 1A-B-C; Physics 5A-B; Mathematics 2A-B-C.

130B Quantum Chemistry, Spectroscopy, and Bonding (4) W. Fundamentals of molecular quantum mechanics. Development of the principles of rotational, vibrational, electronic, and magnetic resonance spectroscopy. Chemical bonding. Applications to biological and condensed phase systems. Prerequisite: Chemistry 130A.

130C Structure, Statistical Mechanics, and Chemical Dynamics (4) S. Kinetic theory and statistical mechanics with applications to gases, macromolecules, and condensed phases. Transport phenomena. Chemical kinetics. Prerequisite: Chemistry 130B.

131A-B-C Physical Chemistry: A Molecular Approach. Lecture, three hours; discussion, one hour.

131A Quantum Principles (4) F. Principles of quantum chemistry with applications to nuclear motions and the electronic structure of the hydrogen atom. Corequisite: Physics 5C. Prerequisites: Chemistry 1A-B-C, Physics 5A-B, Mathematics 2A-B-C.

131B Molecular Structure and Elementary Statistical Mechanics (4) W. Multielectron atoms, molecules, and the chemical bond. Boltzmann statistics with applications to dilute gases. Prerequisite: Chemistry 131A.

131C Thermodynamics and Chemical Dynamics (4) S. Energy, entropy, and the thermodynamic potentials. Chemical equilibrium. Chemical kinetics. Prerequisite: Chemistry 131B.

135 Methods of Molecular Structure Determination (4) F. 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 (4) F. Lecture, three hours; discussion, one hour. Theoretical aspects of methods in analytical chemistry. Topics include statistical treatment of data and the fundamental chemistry which underlies methods of chemical analysis. Corequisite: Chemistry 151L. Prerequisites: Chemistry 1A-B-C, 1LB-LC; 51A-B-C and 51LA-LB-LC or 52A-B-C and 52LA-LB-LC.

151L Quantitative Analytical Chemistry Laboratory (2) F. Discussion, one hour; laboratory, six hours. Practical aspects of important methods in analytical chemistry. Laboratory analysis of standard samples. Laboratory experiments include methods of gravimetry, titrimetry, chromatography and other separation methods, spectrochemical and electrochemical measurements. The use of computer programs for the reduction of data from laboratory experiments is encouraged. Corequisite: Chemistry 151. Prerequisites: Chemistry 1A-B-C, 1LB-LC; 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 and 151L.

153 Physical Chemistry Laboratory (4) S. Prelaboratory lecture, three hours; laboratory, nine hours. Laboratory exercises emphasize quantitative characterization of chemical substances and chemical processes. Experiments in chemical thermodynamics, atomic and molecular spectroscopy, chemical kinetics, and various methods of molecular structure determination. Corequisite: Chemistry 130C or 131C. Prerequisites: Chemistry 151, 151L, and Chemistry 130A-B or 131A-B.

156 Advanced Laboratory in Chemistry and Synthesis of Materials (4) S. Lecture, two hours; laboratory, eight hours. Synthesis and characterization of organic and inorganic materials including polymers, oxides, metal alloys, electronic materials. Techniques include electron microscopy, solid-state NMR, gel permeation chromatography, photolithography, x-ray diffraction, porosity, and thermal analysis. Prerequisite: Chemistry 130A-B or 131A-B or Engineering E54. Same as Engineering ChE156. Chemistry 156 and Engineering MSE159 may not both be taken for credit.

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, 151L.

180 Undergraduate Research (4-4-4) F, W, S. The student wishing to engage in research for credit should arrange with a member of the faculty to sponsor and supervise such work. A student time commitment of 10 to 15 hours per week is expected, and a written research report is required at the end of each quarter of enrollment. Prerequisite: consent of a faculty sponsor.

H180A-B-C Honors Research in Chemistry (4-4-4) F, W, S. Undergraduate honors research in Chemistry. A student time commitment of 10–15 hours per week is required. Corequisite for H180C: Chemistry H181. Prerequisites: consent of instructor; open to participants in the Chemistry Honors program and to Chemistry majors participating in the Campuswide Honors Program.

H181 Honors Seminar in Chemistry (2) S. Students receive guidance in the preparation of oral and written research presentations. A written thesis is prepared and a formal research seminar is presented. Corequisite: Chemistry H180C. Prerequisites: successful completion of Chemistry H180A-B; satisfactory completion of the lower-division writing requirement. Open only to students in the Chemistry Honors Program and Chemistry majors who are participating in the Campuswide Honors Program.

191 Chemistry Outreach Program (2) F, W, S. Field work, six to eight hours; discussion, one hour. Involves intensive participation in the UCI Chemistry Outreach Program, which performs Chemistry demonstrations at local high schools. Pass/Not Pass only. May be taken for credit six times.

192 Tutoring in Chemistry (2) F, W, S. Enrollment limited to participants in the Chemistry Peer Tutoring Program. Prerequisite: consent of instructor. May be taken for a total of 18 units of which the first eight may be taken for a letter grade. The remaining 10 units must be taken Pass/Not Pass only. NOTE: No more than eight units may be counted toward the 180 units required for graduation. Satisfies no degree requirement other than contribution to the 180-unit total.

199 Independent Study in Chemistry (1 to 4 per quarter). The student wishing to engage in independent study for credit should arrange with a member of the faculty to sponsor and supervise such work. A student time commitment of three to four hours per week per unit is expected, and a written report on the independent study is required at the end of each quarter of enrollment. Prerequisite: consent of instructor.

GRADUATE

201 Organic Reaction Mechanisms I (4). Lecture, three hours; discussion, one hour. Advanced treatment of basic mechanistic principles of modern organic chemistry. Topics include molecular orbital theory, orbital symmetry control of organic reactions, aromaticity, carbonium ion chemistry, free radical chemistry, the chemistry of carbenes and carbanions, photochemistry, electrophilic substitutions, aromatic chemistry. Prerequisite: Chemistry 130A-B-C or 131A-B-C or equivalent.

202 Organic Reaction Mechanisms II (4). Lecture, three hours; discussion, one hour. Topics include more in-depth treatment of mechanistic concepts, kinetics, conformational analysis, computational methods, stereoelectronics, and both solution and enzymatic catalysis. Prerequisite: Chemistry 201.

203 Organic Spectroscopy (4). Lecture, three hours; discussion, one hour. Modern methods used in structure determination of organic molecules. Topics include mass spectrometry; ultraviolet, chiroptical, infrared, and nuclear magnetic resonance spectroscopy. Prerequisite: Chemistry 51A-B-C or 52A-B-C.

204 Organic Synthesis I (4). Lecture, three hours; discussion, one hour. Fundamentals of modern synthetic organic chemistry will be developed. Major emphasis is on carbon-carbon bond forming methodology. Topics include carbonyl annelations, cycloadditions, sigmatropic rearrangements, and organometallic methods. Corequisite: concurrent enrollment in Chemistry 202.

205 Organic Synthesis II (4). Lecture, three hours; discussion, one hour. Fundamentals of modern synthetic organic chemistry will be developed. Major emphasis this quarter is on natural product total synthesis and retrosynthetic (antithetic) analysis. Prerequisite: Chemistry 204.

206 Laboratory Skills (4 to 6). Lecture, three hours; laboratory, six to ten hours. Introduces students to a variety of practical laboratory techniques, including lock-in, boxcar, coincidence counting, noise filtering, PID control, properties of common transducers, computer interfacing to instruments, vacuum technology, laboratory safety, basic mechanical design, and shop skills. Prerequisite: consent of instructor. Same as Physics 206.

207 Chemistry for Physicists (4). Lecture, three hours; discussion, one hour. Introduction to fundamental concepts in molecular structure and reactivity: theory of bonding, valence and molecular orbitals; structure and reactivity in inorganic chemistry, elements in molecular group theory, nomenclature in organic chemistry; and survey of macromolecules. Same as Physics 207.

213 Chemical Kinetics (4) S. Lecture, three hours; discussion, one hour. Surveys gas phase and organic reaction mechanisms and their relationship to kinetic rate laws; treats the basic theory of elementary reaction rates. A brief presentation of modern cross-sectional kinetics is included. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent.

215 Inorganic Chemistry I (4). Lecture, three hours; discussion, one hour. Principles of modern inorganic chemistry with applications to chemical systems of current interest. Inorganic phenomena are organized into general patterns which rationalize observed structures, stabilities, and physical properties. Prerequisites: Chemistry 107 and 130A-B-C or 131A-B-C or equivalent.

216 Organometallic Chemistry (4). Lecture, three hours; discussion, one hour. Synthesis and reactivity of organometallic complexes with an emphasis on mechanisms. Topics include bonding and fluxional properties; metal-carbon single and multiple bonds; metal π-complexes. Applications to homogenous catalysis and organic synthesis are incorporated throughout the course. Prerequisite: Chemistry 107 or 215.

217 Physical Inorganic Chemistry (4). Lecture, three hours; discussion, one hour. General principles of the spectroscopy and magnetism of inorganic compounds. Characterization of inorganic complexes by infrared, near-infrared, visible, ultraviolet, NMR, EPR, EXAFS, and Mossbauer spectroscopies. Some necessary group theory developed. Prerequisite: Chemistry 215 or consent of instructor.

218 Metallobiochemistry (4). Lecture, three hours; discussion, one hour. A review of the biochemistry of metallic elements emphasizing: methods for studying metals in biological systems; the chemical basis for nature's exploitation of specific elements; structures of active sites; mechanisms; solid-state structures and devices; metals in medicine. Prerequisite: Chemistry 130A-B-C or equivalent.

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.

226 Materials Science of Polymers (4). Lecture, three hours; discussion, one hour. A study of the structural, conformational, statistical, and statistical thermodynamic bases underlying the viscous, elastic, glassy, and crystalline behavior of polymers in materials applications. Prerequisites: undergraduate courses in organic chemistry, statistical thermodynamics, and mechanics; consent of instructor.

227 Molecular Modeling (4). Laboratory, four hours. Concepts of molecular mechanics and electronic structure theory, and applications to practical chemical questions. Topics include prediction of conformational preference, reactivity, and selectivity. A hands-on course with numerous worked problems and examples using graphics workstations. Prerequisite: consent of instructor.

228 Electromagnetism (4). Lecture, three hours; discussion, one hour. Maxwell's equations, electrodynamics, electromagnetic waves and radiation, wave propagation in media, interference and quantum optics, coherent and incoherent radiation, with practical applications in interferometry, lasers, waveguides, and optical instrumentation. Prerequisite: consent of instructor. Same as Physics 228.

229A-B Computational Methods (4). Lecture, three hours; laboratory, six hours. Mathematical and numerical analysis using Mathematica and C programming, as applied to problems in physical science. Prerequisite: consent of instructor. Same as Physics 229A-B.

230 Classical Mechanics and Electromagnetic Theory (4). Lecture, three hours; discussion, one hour. The fundamentals of classical mechanics and electromagnetic theory are developed with specific application to molecular systems. Newtonian, Lagrangian, and Hamiltonian mechanics are developed. Boundary value problems in electrostatics are investigated. Multipole expansion and macroscopic media are discussed from a molecular viewpoint. Prerequisite: Chemistry 131A-B-C or equivalent.

231A-B-C Quantum Mechanics and Spectroscopy. Lecture, three hours; discussion, one hour.

231A 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) W. Lecture, three hours; discussion, one hour. A detailed discussion from an advanced point of view of the principles of classical thermodynamics. The fundamentals of statistical mechanics. Topics include an introduction to ensemble theory, Boltzmann statistics, classical statistical mechanics, and the statistical mechanics of ideal gas systems. Prerequisite: Chemistry 130A-B-C or 131A-B-C or equivalent.

232B Advanced Topics in Statistical Mechanics (4) S. Continued discussion of the principles of statistical mechanics. Applications to topics of chemical interest including imperfect gases, liquids, solutions, and crystals. Modern techniques such as the use of autocorrelation function methods. Prerequisite: Chemistry 232A or equivalent.

232C Non-Equilibrium Statistical Mechanics (4) F. Lecture, three hours; discussion, one hour. Phenomenology of material processes, including: kinetic theories of transport and continuum, linear response theory, critical phenomena of phase transition, self-assembly, and nucleation. Prerequisite: consent of instructor.

233 Nuclear and Radiochemistry (4). Lecture, three hours. Advanced treatment (beyond that in Chemistry 170) of nuclear structure, nuclear reactions, and radioactive-decay processes. Introduction to nuclear activation analysis, isotope effects, radiation chemistry, hot-atom chemistry, nuclear age-dating methods, nuclear reactors, and nuclear power. Prerequisite: Chemistry 170 or equivalent or consent of the instructor.

234 Advanced Chemical Kinetics (4). Topics and format vary. Prerequisite: Chemistry 213 or consent of the instructor.

235 Molecular Quantum Mechanics (4) W. Lecture, three hours; discussion, one hour. Application of quantum mechanics to calculation of molecular properties. Electronic structure of molecules. Prerequisite: Chemistry 231A or equivalent.

236 Concepts in Solid State (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: One course selected from Chemistry 245, Earth System Science 202, Engineering MAE164, Engineering MAE261, or consent of instructor. Same as Engineering MAE 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 and 151L or equivalent.

246 Separations and Chromatography (4). Lecture, three hours; discussion, one hour. Introduction to modern separation techniques such as gas chromatography, high-performance liquid chromatography, supercritical fluid chromatography, capillary electrophoresis, and field flow fractionation. Applications of these separation strategies are discussed.

247 Current Problems in Analytical Chemistry (4). Lecture, three hours; discussion, one hour. Surveys current research challenges in analytical chemistry. Topics include electrochemistry, chromatography, spectroscopy, and mass spectrometry.

248 Electrochemistry (4). Lecture, three hours; discussion, one hour. Fundamentals of electrochemistry including thermodynamics and the electrochemical potential, charge transfer kinetics, and mass transfer. Methods based on controlled potential and controlled current are described; the effects of slow heterogeneous kinetics and the perturbation caused by homogeneous chemistry are discussed.

249 Analytical Spectroscopy (4). Lecture, three hours; discussion, one hour. Advanced treatment of spectroscopic techniques and instrumentation. Atomic and molecular absorption, emission, and scattering processes and their application to quantitative chemical analysis are outlined. Puts different spectroscopic techniques in perspective and demonstrates most appropriate applications to analytical problems.

251 Special Topics in Organic Chemistry (1 to 4). Advanced topics in organic chemistry. Prerequisite: consent of 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.

266 Current Topics in Chemical and Materials Physics (4). Lecture, three hours; discussion, one hour. The subjects covered vary from year to year. Connection between fundamental principles and implementations in practice in science, industry, and technology. Prerequisite: consent of instructor. Same as Physics 266.

271 Structural X-ray Crystallography (4). Lecture, three hours; discussion, one hour. The principles and practice of the determination of structures by single crystal x-ray diffraction techniques. Crystal symmetry, diffraction, structure solution and refinement. Opportunities for hands-on experience in structure determination. Prerequisite: Chemistry 130A-B-C or Chemistry 131A-B-C or equivalent.

272 Industrial Chemistry (4). Lecture, three hours; discussion, one hour. Scientific, economic, and environmental aspects of the top 50 industrially produced chemicals, including how they are obtained and used, present and future sources of energy and raw materials, and the effects of chemical manufacturing on the price structure of our economy. Prerequisite: consent of instructor.

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 Graduate Symposium (2) F. Students present public seminars on literature-based research topics in contemporary chemistry. Topics to be chosen by student and approved by instructor. Satisfactory/Unsatisfactory only.

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 Rowland Hall; (949) 824-8794
Ellen R. M. Druffel, **Chair**

Faculty

Ralph J. Cicerone, Ph.D. University of Illinois, *Chancellor, Professor of Earth System Science and Chemistry, and Daniel G. Aldrich Jr. Chair* (atmospheric and analytical chemistry)

Ellen R. M. Druffel, Ph.D. University of California, San Diego, *Department Chair and Professor of Earth System Science* (geochemistry and oceanography)

Sarah Gille, Ph.D. Massachusetts Institute of Technology-Woods Hole Oceanographic Institution Joint Program, *Assistant Professor of Earth System Science* (oceanography)

Michael L. Goulden, Ph.D. Stanford University, *Assistant Professor of Earth System Science* (biosphere-atmosphere exchange, physiological ecology)

Gudrun Magnusdottir, Ph.D. Colorado State University, *Associate Professor of Earth System Science* (atmospheric dynamics)

Michael Prather, Ph.D. Yale University, *Professor of Earth System Science* (mathematical modeling of atmospheric chemistry and radiation)

William S. Reeburgh, Ph.D. The Johns Hopkins University, *Professor of Earth System Science* (geochemistry and biogeochemistry)

Eric S. Saltzman, Ph.D. University of Miami, *Professor of Earth System Science* (marine and atmospheric chemistry)

Susan E. Trumbore, Ph.D. Columbia University, *Associate Professor of Earth System Science* (geochemistry and biogeochemistry)

Laurel L. Wilkening, Ph.D. University of California, San Diego, *Chancellor Emerita and Professor Emerita of Earth System Science* (planetary science)

Charles S. Zender, Ph.D. University of Colorado, *Assistant Professor of Earth System Science* (atmospheric sciences)

Affiliated Faculty

Donald R. Blake, Ph.D. University of California, Irvine, *Professor of Chemistry and Earth System Science* (atmospheric and analytical chemistry, and radiochemistry)

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 and analytical 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. At the undergraduate level, courses are designed to educate both science and non-science majors in the physical, chemical, and biological principles underlying global environmental problems, and a major in Earth and Environmental Sciences and a minor in Earth and Atmospheric Sciences are offered. At the graduate level, the Department offers a program leading to the M.S. and Ph.D. degrees in Earth System Science. Graduate study emphasizes laboratory, field, and modeling studies of global change in the environment from the perspective of physical, chemical, and biological processes occurring in and linkages among the atmosphere, the ocean, and terrestrial systems.

Undergraduate Program

The Department offers a major in Earth and Environmental Sciences and an interdisciplinary minor in Earth and Atmospheric Sciences. Both the major and the minor consist of a set of required Earth System Science core courses and a group of elective courses drawn from offerings in Physical Sciences, Biological Sciences, Engineering, and Social Ecology. The core courses focus on the application of physical, chemical, and biological principles to understanding the complex interactions of the atmosphere, ocean, and land through climate and biogeochemical cycles. The Department also offers a group of lower-division breadth courses appropriate for non-science majors.

The objective of the major is to prepare undergraduates to understand the rapidly evolving field of Earth system science. Students work with faculty and graduate students to obtain a quantitative understanding of the Earth system, focusing attention on global reservoirs (atmospheric, terrestrial biosphere, and ocean) and on the processes that can change this system over a human lifetime. Majors develop the analytical and quantitative skills needed to understand sensitive environmental issues and to apply this knowledge to the public, private, and educational sectors. All Earth and Environmental Sciences majors are strongly encouraged to participate in undergraduate research with a Department faculty member through Earth System Science 199 and to complete a senior thesis.

The minor is open to all students (except Earth and Environmental Sciences majors), but is designed primarily for students in the natural sciences and engineering who wish to explore interdisciplinary problems and broaden their studies to include the application of their field to understanding the Earth system.

Admission to the Major

Students may be admitted to the Earth and Environmental Sciences major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus and one year of *either* general chemistry or calculus-based physics.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: None.

Departmental Requirements

A. Earth System Science 10, 101A-B-C, 108, 109, 190C; Mathematics 2A-B-C; Chemistry 1A-B-C, 1LB-LC; Physics 3A-B-C, 3LB-LC or 5A-B-C, 5LB-LC or 7A-B-E, 7LA-LB*; Biological Sciences 94; one computer programming course selected from ICS 21, Engineering E10, CEE 10, MAE 10, ECE 11, Chemistry 5, or Physics 53; three upper-division courses selected from Earth System Science 102, 110, 111, 112, 120, 160, or 162.

* If the Physics 7 series is chosen, it is recommend that Physics 7D, 7LD, and 52A also be taken.

B. Either option (1) Mathematics 3A or 6C or Physical Sciences 50A, and Mathematics 3D or Physical Sciences 50C; or option (2) Chemistry 51A-B, 51LA-LB.

C. Three electives selected from the following (excluding any courses being used in satisfaction of requirements A and B): Earth System Science 102, 110, 111, 112, 120, 160, 162; Chemistry 51A-B-C or 52A-B-C, 107, 107L, 130A-B-C, 152, 170; Mathematics 3A or 6C or Physical Sciences 50A, Mathematics 3D or Physical Sciences 50C, Mathematics 105A, 112A-B, 131A-B-C; Physical Sciences 50B; Physics 5D or 51A, 5E or 51B, 115A, 115B, 120, 134, 137, 144, 145; Engineering MAE 162 (same as Earth System Science 162), 91, 130A, 164, 180, 185; CEE 164/164L, 171, 172, 174; Biological Sciences 98, 122, 126, 133, 134, 166, 178, 179, 179L, 186; Environmental Analysis and Design E160, E160L, E185. Other courses may be approved by petition.

MINOR IN EARTH AND ATMOSPHERIC SCIENCES

Requirements for the Minor

(NOTE: All of these courses have prerequisites. Students pursuing the minor should plan to fulfill all prerequisites prior to enrolling in these courses.)

Earth System Science 101A-B-C, plus four courses selected from the following lists:

Physical Sciences: All Earth System Science courses with numbers greater than 101 (Earth System Science 199 may be used no more than once); Chemistry 130A (Chemical Thermodynamics), 151/151L (Quantitative Analytical Chemistry), 152 (Advanced Analytical Chemistry), 170 (Radioisotope Techniques); Mathematics 105A (Numerical Analysis), 112A, 112B (Mathematical Methods for Engineering and Science), 131A-B-C (Mathematical Statistics); Physics 115B (Thermodynamics), 120 (Electronics for Scientists), 134 (Introduction to Modern Optics), 137 (Introduction to Cosmology), 144 (Stellar Astrophysics), 145 (High-Energy Astrophysics).

Biological Sciences: Biology 96 (Ecology), 122 (General Microbiology), 126 (Physiological Ecology; part of the White Mountain Research Supercourse), 133 (Field Ecology; part of the White Mountain Research Supercourse), 134 (Plant Physiology), 166 (Field Methods in Ecology), 178 (Ocean Ecology), 179/179L (Limnology and Freshwater Ecology), 186 (Population and Community Ecology).

Engineering: Engineering CEE132 (Geology for Engineers and Scientists), CEE164/164L (Chemistry for Environmental Engineering), CEE171 (Infrastructure Hydraulics), CEE172 (Groundwater Hydrology), CEE174 (Transport Phenomena in Porous Media), CEE185 (Numerical Methods and Mathematics); Engineering MAE91 (Introduction to Thermodynamics), MAE130A (Introduction to Fluid Mechanics), MAE162 (Engineering Meteorology; same as Earth System Science 162), MAE164 (Air Pollution and Control), MAE180 (Instrumentation and Data Analysis), MAE185 (Numerical Analysis in Mechanical Engineering).

Social Ecology: Environmental Analysis and Design E160/E160L (Microbial Ecology of Natural and Polluted Waters).

Other courses may also be approved by petition.

NOTE: Earth and Environmental Sciences majors may not complete the minor in Earth and Atmospheric Sciences.

Graduate Program

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. Students are admitted to the Ph.D. program only; the Master's degree is awarded upon progress to the Ph.D.

To complete the course requirements for the Ph.D. program, a minimum of 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), 210 (Geoscience Modeling), 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, Ph.D. students are required to complete a teaching assistant training program and to have a minimum of two quarters of experience as a teaching assistant, provided opportunities are available.

Academic Senate regulations specify a minimum period of residence of six quarters for Ph.D. candidates. Enrollment in a minimum of 12 units of graduate/upper-division course work per quarter is required. Registration in every regular academic session is necessary until all requirements for the degree have been completed, unless a formal Leave of Absence is granted by the 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 during the fall 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 and summer research, during the fall 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 biosphere and soils. Any three courses selected from Earth System Science 10, 14, 15, 20E, 20F, Physics 18, 20A, 20B, 20C, and 20D will satisfy the natural sciences breadth requirement. Lower-division Earth System Science courses also are core or elective courses in the interdisciplinary minor in Global Sustainability; see the Interdisciplinary Studies section of this *Catalogue* for information.

Upper-division courses are particularly appropriate as electives for students majoring in the physical or biological sciences, or engineering, with an interest in applying physics, chemistry, and biology to study the Earth's atmosphere, oceans, biosphere, and climate.

Lower-Division

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)**

14 Geology (4) W. Basic geologic principles; teaches students how to interpret earth history from landforms and the rock record, understand volcano and earthquake risks, and recognize the distribution of resources. The geologic time scale, fossil record, and major events in earth history are explored. **(II)**

15 Atmospheric Pollution, Ozone, and Climate (4) S. Air pollution occurs on global, continental, and urban scales. We pollute the atmosphere in different ways. Its consequences on the quality of the air we breathe, health of our ecosystems, ozone layer depletion, and changes in our climate are studied. **(II)**

20E The Atmosphere (4) W. The composition and circulation of the atmosphere with a focus on explaining the fundamentals of weather and climate. Topics include solar and terrestrial radiation, clouds, and weather patterns. **(II)**

20F Oceanography (4) S. Examines circulation of the world oceans and ocean chemistry as it relates to river, hydrothermal vent, and atmospheric inputs. Geological features, the wide variety of biological organisms, and global climate changes, such as greenhouse warming, are also studied. **(II)**

H90 The Idiom and Practice of Science (4). A series of fundamental and applied scientific problems are addressed, illustrating the pervasive role of mathematical analysis. Topics may include energy utilization, the climate system, the "greenhouse effect," ozone depletion and air pollution, ecological consequences of water pollution, nutrient cycles. Open only to members of the Campuswide Honors Program or consent of instructor. **(II)**

Upper-Division

101A Physical Climate (4) F. Physical interaction in the climate system, viewed from a global perspective, emphasizing atmospheric processes and their interactions with the ocean and land surface. Topics include atmospheric composition, the global energy balance, radiative transfer and climate, atmospheric circulation and climate sensitivity. Prerequisites: Mathematics 2A-B-C and Chemistry 1A-B-C. Concurrent with Earth System Science 201A.

101B Global Biogeochemistry (4) W. 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. Prerequisite: Earth System Science 101A. Concurrent with Earth System Science 201B.

101C Earth System Change (4) S. Past and future climate. Proxy records to detect changes in climate since the last glacial maximum. Mechanisms responsible for climate variability. Forecasts future climatic change due to natural and anthropogenic variability. Prerequisite: Earth System Science 101B. Concurrent with Earth System Science 201C.

102 Atmospheric and Environmental Chemistry (4) S. Applications of thermodynamics and kinetics to environmental systems. Topics include: chemistry of stratospheric ozone, acid-base equilibria, weathering, redox chemistry in sediments, and isotope geochemistry. Prerequisites: Chemistry 1A-B-C. Concurrent with Earth System Science 202.

108 Data Analysis for Climate Sciences (4) F. Analysis and interpretation of geophysical data, including functional fitting, probability density functions, and multidimensional time-series methods, with applications in atmospheric, oceanic, and biogeochemical sciences. Corequisite: Earth System Science 101A. Concurrent with Earth System Science 208.

109 Earth System Science Laboratory and Field Methods (4) S. Introduction to methods used to measure exchange of gases and energy between the atmosphere and terrestrial ecosystems. Laboratories include data acquisition and isotopic and chromatographic analysis. Field measurements at UCI's Marsh Reserve include microclimate, hydrology, trace-gas exchange, and plant growth. Concurrent with Earth System Science 214.

110 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. Concurrent with Earth System Science 210.

111 Radiative Processes and Remote Sensing (4) F. Interaction between solar and terrestrial radiation and the Earth system. Introduction to radiative transfer theory, influence of trace gases and aerosols, trends in radiative forcing. Principles and applications of remote sensing, satellite retrieval of atmospheric, oceanic, and land-surface properties. Prerequisites: Mathematics 2D or equivalent and Physics 5A-B-C or equivalent, or consent of instructor. Concurrent with Earth System Science 211.

112 Atmospheric Dynamics (4) W. Fluid dynamical processes that determine the large-scale flow of the atmosphere and ocean. Most important are interactions between the density stratification and the Coriolis force associated with Earth's rotation. Topics include circulation, vorticity, planetary waves and their role in climate. Prerequisites: Mathematics 2D or Physical Sciences 50A; Physics 5A-B, Physics 7A-B-E, or consent of instructor. Concurrent with Earth System Science 212.

120 Terrestrial Ecosystems (4) W. A mechanistic perspective of the structure and functioning of terrestrial ecosystems. Includes the mechanisms that control plant growth, hydrology and nutrient cycling, and the roles terrestrial ecosystems play in local and global biogeochemistry. Prerequisite: Biology 96 or consent of instructor. Same as Biological Sciences 118 and Environmental Analysis and Design E179.

160 Physical Oceanography (4) W. Ocean dynamics, including the physical processes that control currents, wind-driven circulation, thermohaline circulation, and El Niño. Also examines heat, salt, and nutrient fluxes, and their role in global climate. Prerequisites: Mathematics 2D or Physical Sciences 50B; Physics 5A-B, Physics 7A-B-C, or consent of instructor.

162 Engineering Meteorology (4) F. Fundamentals and aspects of atmospheric sciences important to engineering and environmental problems. Basic physics and thermodynamics of the atmosphere; dispersion of pollutants. A design problem is included. Prerequisites: Engineering MAE91 or ChE60; Engineering MAE130A or CEE170 or ChE120A or consent of instructor. Same as Engineering MAE162.

190A-B Senior Seminar on Global Sustainability I, II (2-2) F, W. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations. **A:** Prepare bibliography. **B:** Prepare research proposal. In-progress grading for 190A-B, grade for sequence given upon completion of 190C. Prerequisites: senior standing, Biological Sciences 65, Environmental Analysis and Design E20, and Earth System Science 10. Same as Biological Sciences 191A-B and Social Ecology 186A-B.

190C Writing/Senior Seminar on Global Sustainability III (4) S. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. Prepare/write research paper under the direction of a faculty member. Prerequisites: Earth System Science 190A-B and satisfaction of the lower-division

writing requirement. Same as Biological Sciences 191C and Social Ecology 186C.

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 Physical Climate (4) F. Physical interaction in the climate system, viewed from a global perspective, emphasizing atmospheric processes and their interactions with the ocean and land surface. Topics include atmospheric composition, the global energy balance, radiative transfer and climate, atmospheric circulation and climate sensitivity. Concurrent with Earth System Science 101A.

201B Global Biogeochemistry (4) W. 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. Prerequisite: Earth System Science 201A. Concurrent with Earth System Science 101B.

201C Earth System Change (4) S. Past and future climate. Proxy records to detect changes in climate since the last glacial maximum. Mechanisms responsible for climate variability. Forecasts future climatic change due to natural and anthropogenic variability. Prerequisite: Earth System Science 201B. Concurrent with Earth System Science 101C.

202 Atmospheric and Environmental Chemistry (4). Applications of thermodynamics and kinetics to environmental systems. Topics include: chemistry of stratospheric ozone, acid-base equilibria, weathering, redox chemistry in sediments, and isotope geochemistry. Concurrent with Earth System Science 102.

208 Data Analysis for Climate Sciences (4) F. Analysis and interpretation of geophysical data, including functional fitting, probability density functions, and multidimensional time-series methods, with applications in atmospheric, oceanic, and biogeochemical sciences. Corequisite: Earth System Science 201A. Concurrent with Earth System Science 108.

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. Concurrent with Earth System Science 110.

211 Radiative Processes and Remote Sensing (4) F. Interaction between solar and terrestrial radiation and the Earth system. Introduction to radiative transfer theory, influence of trace gases and aerosols, trends in radiative forcing. Principles and applications of remote sensing, satellite retrieval of atmospheric, oceanic, and land-surface properties. Prerequisites: Mathematics 2D or equivalent and Physics 5A-B-C or equivalent, or consent of instructor. Concurrent with Earth System Science 111.

212 Atmospheric Dynamics (4) W. Fluid dynamical processes that determine the large-scale flow of the atmosphere and ocean. Most important are interactions between the density stratification and the Coriolis force associated with Earth's rotation. Topics include circulation, vorticity, planetary waves and their role in climate. Concurrent with Earth System Science 112.

214 Earth System Science Laboratory and Field Methods (4) S. Introduction to methods used to measure exchange of gases and energy between the atmosphere and terrestrial ecosystems. Laboratories include data acquisition and isotopic and chromatographic analysis. Field measurements at UCI's Marsh Reserve include microclimate, hydrology, trace-gas exchange, and plant growth. Concurrent with Earth System Science 109.

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.

399 University Teaching (1 to 4) F, W, S. Required of and limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

DEPARTMENT OF MATHEMATICS

420 Rowland Hall; (949) 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)
Larry Chrystal, M.A. University of California, Santa Barbara, *Lecturer in Mathematics*
Donald Darling, Ph.D. California Institute of Technology, *Professor Emeritus of Mathematics*
Panagiota Daskalopoulos, Ph.D. University of Chicago, *Department Vice Chair for Graduate Studies and Associate 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)
Aleksandr Figotin, Ph.D. Tashkent University, *Professor of Mathematics* (applied mathematics, electromagnetic waves in inhomogeneous media, photonic crystals)
Mark Finkelstein, Ph.D. Stanford University, *Associate Professor of Mathematics* (analysis)
Matthew D. Foreman, Ph.D. University of California, Berkeley, *Professor of Mathematics and Philosophy* (logic)
Michael D. Fried, Ph.D. University of Michigan, *Professor of Mathematics* (arithmetic geometry, complex variables)
Svetlana Jitomirskaya, Ph.D. Moscow State University, *Associate 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, *Associate 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)
Song-Ying Li, Ph.D. University of Pittsburgh, *Assistant Professor of Mathematics* (harmonic analysis, several complex variables)
Penelope Maddy, Ph.D. Princeton University, *Department Chair and Professor of Logic and Philosophy of Science and Professor of Mathematics* (logic, philosophy, and foundations of mathematics)
Qing Nie, Ph.D. Ohio State University, *Assistant Professor of Mathematics* (computational applied mathematics)
David L. Rector, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Mathematics* (algebraic topology, computer algebra)
Robert C. Reilly, Ph.D. University of California, Berkeley, *Associate Professor of Mathematics* (differential geometry)
Bernard Russo, Ph.D. University of California, Los Angeles, *Professor of Mathematics* (functional analysis)
Donald G. Saari, Ph.D. Purdue University, *UCI Distinguished Professor of Economics and Mathematics* (dynamical systems and mathematical economics)

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)
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, *Dean of the School of Physical Sciences and Professor of Mathematics* (geometry and topology)
Edriss S. Titi, Ph.D. Indiana University, *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)
Daqing Wan, Ph.D. University of Washington, *Associate Professor of Mathematics* (number theory, algebraic geometry)
Frederic Yui-Ming Wan, Ph.D. Massachusetts Institute of Technology, *Professor of Mathematics and of Mechanical and Aerospace Engineering* (applied mathematics)
Richard A. Wentworth, Ph.D. Columbia University, *Associate 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, *Department Vice Chair for Undergraduate Studies and 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* (real and stochastic analysis)
Hong-Kai Zhao, Ph.D. University of California, Los Angeles, *Assistant Professor of Mathematics* (computational applied mathematics)
Weian Zheng, Ph.D. Université de Strasbourg, *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 B.S. degree in Mathematics. Within this program, students have the option of completing a concentration in Mathematics for Economics, a specialization in Applied and Computational Mathematics, a specialization in Statistics, or a specialization in Mathematics for High School Teaching. In addition, the Department offers a minor in Mathematics.

Undergraduate mathematics courses are of several kinds: courses preparatory to advanced work in mathematics, the exact sciences, and engineering; courses for students of the social and biological sciences; and courses for liberal arts students and those planning to enter the teaching field.

Admission to the Major

Students may be admitted to the Mathematics major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the required course work of one year of approved calculus.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: None.

Departmental Requirements

Lower-Division Requirements (for all Mathematics majors except those in the Teaching specialization):

A. Mathematics 2A-B; 2J or 2C, with 2J preferred; 2D-E; 3A; 3D.

B. Computing skills attained through either Information and Computer Science 21, Engineering E10, Engineering CEE10, Engineering ECE10, Engineering MAE10, or Physics 53.

C. One lecture course sequence selected from Chemistry 1A-B-C; Physics 5A-B-C, 7A-B-D, 7A-B-E, or 7B-D-E. (This also satisfies UCI breadth requirement category II if taken with the accompanying laboratories.)

Upper-Division Requirements (for Mathematics majors except those in the Economics concentration, Applied and Computational specialization, or Teaching specialization): 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

Concentration in Mathematics for Economics

Admission to this concentration requires approval in advance by the Mathematics Department. This approval should be applied for after the student has completed Economics 20A-B-C, but no later than the end of the junior year.

Upper-division requirements:

A. Twelve upper-division Mathematics lecture courses (plus any associated laboratories) including:

1. Nine courses: Mathematics 120, 121A-B, 140A-B-C, 131A-B-C.
2. Three elective lecture courses chosen from Mathematics 105A-B (plus 105LA-LB), 118A-B-C, 130A-B-C, 171A-B.

B. Nine Economics courses: Economics 20A-B-C, 100A-B-C, 123A-B-C.

Specialization in Applied and Computational Mathematics

Upper-division requirements:

A. Thirteen upper-division Mathematics lecture courses (plus any associated laboratories) including:

1. Ten required lecture courses: Mathematics 105A-B, 107 (plus 105LA-LB, 107L); 112A-B-C, 115, 121A, 140A-B.
2. A two-quarter sequence chosen from: Mathematics 118A-B, 120A-B, 130A-B, 131A-B, 140C-D, 162A-B.
3. One additional Mathematics course numbered 100–189.

B. Two approved courses in an area of application outside of Mathematics. Approval must be obtained in advance from the Mathematics Department. The student is responsible for satisfying any prerequisites for these courses.

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, and one additional course approved in advance by the Mathematics Department Undergraduate Advisor.

Departmental Requirements for the Mathematics Major with a Specialization in Mathematics for High School Teaching

Admission to this specialization requires approval in advance by the Mathematics Department. The admission process, which includes an interview with the Department's Undergraduate Advisor and its Tutor Supervisor, should be completed no later than the end of the student's junior year.

Lower-Division Requirements:

A. Mathematics 2A-B; 2J or 2C, with 2J preferred; 2D; 3A; 3D; 6A; 13.

B. Computing skills attained through either Information and Computer Science 21, Engineering E10, Engineering CEE10, Engineering ECE10, Engineering MAE10, or Physics 53.

C. One lecture course sequence (plus the indicated laboratories) selected from Chemistry 1A-B-C (plus 1LB-LC); Physics 5A-B-C (plus 5LB-LC), 7A-B-D (plus 7LA-LB-LD), 7A-B-E (plus 7LA-LB), or Physics 7B-D-E (plus 7LB-LD).

D. In addition, students must satisfy an extra science requirement by taking at least three additional approved science lecture courses, including any accompanying laboratories. The following courses are approved:

1. Chemistry 51A-B and 51LA-LB, plus one quarter of Earth System Science 10, 14, 15, 20E, or 20F (for students taking Chemistry 1A-B-C).
2. Physics 5D-E and 5LD-LE, plus one quarter of Physics 20A, 20B, 20C, or 20D (for students taking Physics 5A-B-C);
3. Physics 7E, 51A-B, plus one quarter of Physics 20A, 20B, 20C, or 20D (for students taking Physics 7A-B-D);
4. Physics 7D (plus 7LD) and 51A-B, plus one quarter of Physics 20A, 20B, 20C, or 20D (for students taking Physics 7A-B-E);
5. Physics 51A-B, plus two quarters of Physics 20A, 20B, 20C, or 20D (for students taking Physics 7B-D-E but testing out of Physics 7A);

Although course groupings 1–5 above are the "preferred" ways to satisfy the extra science requirement for this specialization, a student can request approval to substitute other suitable science courses, including certain upper-division Mathematics courses. Such approval is not automatic and should be obtained from the Mathematics Department Undergraduate Advisor *before* a student takes the courses.

Upper-Division Requirements:

A. Twelve Mathematics lecture courses, numbered 100–189, plus any accompanying laboratories, including: Mathematics 120A-B, 121A, either 121B or 124, 140A-B, 131A, 150, 180, 182, 184.

B. One quarter of Education 100 and two quarters of Mathematics 192.

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.)

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 the Mathematics Department Undergraduate Advisor.

Sample Program — Mathematics Major Interested in Pure Mathematics or Preparing for Graduate Study in Mathematics

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Sophomore		
Math. 2E	Math. 3A	Math. 3D
Math. 2J	ICS 21	Math. 13
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Junior		
Math. 120A	Math. 120B	Math. 121B
Math. 140A	Math. 121A	Math. 140C
Breadth/Elective	Math. 140B	Math. 146
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Math. 140D	Math. 151	Math. 141A
Math. 150	Math. 162A	Math. 152
Breadth/Elective	Breadth/Elective	Math. 162B
Breadth/Elective	Breadth/Elective	Breadth/Elective

Sample Program — Mathematics Major Concentrating in Mathematics for Economics

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Sophomore		
Math. 2E	Math. 3A	Math. 3D
Math. 2J	ICS 21	Math. 13
Economics 20A	Economics 20B	Economics 20C
Breadth/Elective	Breadth/Elective	Breadth/Elective
Junior		
Math. 131A	Math. 131B	Math. 131C
Math. 140A	Math. 140B	Math. 140C
Economics 100A	Economics 100B	Economics 100C
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Math. 120A	Math. 121A	Math. 121B
Math. 105A, LA	Math. 171A	Math. 171B
Economics 123A	Economics 123B	Economics 123C
Breadth/Elective	Breadth/Elective	Breadth/Elective

Sample Program — Mathematics Major Specializing in Applied and Computational Mathematics

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Sophomore		
Math. 2J	Math. 2E	Math. 3D
ICS 21	Math. 3A	Math. 13
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Junior		
Math. 112A	Math. 112B	Math. 112C
Math. 140A	Math. 140B	Math. 115
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Math. 105A, LA	Math. 105B, LB	Math. 107, 107L
Math. 118A	Math. 118B	Math. 118C
Technical Elective	Technical Elective	Math. 121A
Breadth/Elective	Breadth/Elective	Breadth/Elective

Sample Program — Mathematics Major Specializing in Statistics

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Sophomore		
Math. 2E	Math. 3A	Math. 3D
Math. 2J	ICS 21	Math. 13
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Junior		
Math. 120A	Math. 121A	Math. 121B
Math. 132A	Math. 132B	Math. 132C
Math. 140A	Math. 140B	Math. 140C
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Math. 105A, 105LA	Math. 105B, 105LB	Math. 131C
Math. 131A	Math. 131B	Math. 146
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective

Sample Program — Mathematics Major Specializing in Mathematics for High School Teaching

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
Physics 20A	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Sophomore		
Math. 2J	Math. 3A	Math. 3D
Math. 6A	Physics 51A	Math. 13
Physics 7E	ICS 21	Physics 51B
Breadth/Elective	Breadth/Elective	Breadth/Elective
Junior		
Math. 120A	Math. 120B	Math. 121A
Math. 140A	Math. 140B	Math. 124
Math. 192	Math. 192	Education 100
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Math. 131A	Math. 151 or 131B	Math. 182
Math. 150	Math. 180	Math. 184
Breadth/Elective	Breadth/Elective	Breadth/Elective
Elective	Elective	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 three pathways which lead to the Master of Science in Mathematics degree: Pure Mathematics, Applied Mathematics, and the Master of Science with a Teaching Credential. The first two programs are described below; the third 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 two areas of concentration: Pure Mathematics and Applied Mathematics. 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.

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.

Students must satisfy the language requirement by demonstrating reading proficiency in French, German, or Russian.

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 Single-Variable Calculus (4-4) F, W, S, Summer. Lecture, three hours; discussion, two hours. **2A:** 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 the start of the quarter in which Mathematics 2A will be taken. **2B:** Definite integrals, their applications (areas, volumes, etc.), and methods of integration. Logarithmic and exponential functions. Polar coordinates. Prerequisite for Mathematics 2B: 2A. **(V)**

2C Infinite Series and Three-Dimensional Geometry (4) F, W, S, Summer. Lecture, three hours; discussion, two hours. 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. Mathematics 2C and Mathematics 2J may not both be taken for credit. **(V)**

2D-E Multivariable Calculus. 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. Mathematics 2D and Physical Sciences 50B may not both be taken for credit. **(V)**

2E (4) W, S. The differential and integral calculus of vector-valued functions. Implicit and inverse function theorems. Line and surface integrals, divergence and curl, theorems of Green, Gauss, and Stokes. Prerequisite: 2D.

2F Applied Vector Calculus and Differential Equations (4) S. Lecture, three hours; discussion, two hours. Classical vector analysis, including the theorems of Green, Gauss, and Stokes. N-th order linear equations; linear systems of differential equations with constant coefficients; Laplace transforms; nonlinear differential equations. Applications. Prerequisites: Mathematics 2A-B-C, 2D, 3A. Only one course from Mathematics 2F, Mathematics 3D, and Physical Sciences 50C may be taken for credit.

2J Infinite Series, Complex Numbers, and Basic Linear Algebra (4). Lecture, three hours; discussion, two hours. Infinite sequences and series; complex numbers; systems of linear algebraic equations, determinants, basic matrix operations, eigenvalues, and eigenvectors. Prerequisites: Mathematics 2A-B. Mathematics 2J and Mathematics 2C may not both be taken for credit. **(V)**

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; 2C or 2J. Only one course from Mathematics 3A, Mathematics 6C, and Physical Sciences 50A may 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, series solutions. Further topics as time permits. Prerequisites: Mathematics 2A-B-J. The pairs of courses Mathematics 2C and 3A, or 2C and 6C, can be used in place of 2J. Only one course from Mathematics 3D, Mathematics 2F, and Physical Sciences 50C may be taken for credit.

6A Discrete Mathematics for Computer Science (4). Lecture, three hours; discussion, two hours. Covers essential tools from discrete mathematics used in computer science with an emphasis on the process of abstracting computational problems and analyzing them mathematically. Topics include: combinatorics, mathematical induction, elementary probability, and asymptotic analysis. Prerequisite: high school mathematics through trigonometry. Same as Information and Computer Science 6A. **(V)**

6B Discrete Mathematics: Boolean Algebra and Logic (4). Lecture, three hours; discussion, two hours. Boolean algebra, finite state machines, formal languages, formal logic. Prerequisite: Mathematics 6A or Information and Computer Science 6A. **(V)**

6C Linear Algebra (4). Lecture, three hours; discussion, two hours. Linear equations, vector spaces and subspaces, linear functions and matrices, linear codes, determinants, scalar products. Prerequisite: high school mathematics through trigonometry. Only one course from Mathematics 6C, Mathematics 3A, and Physical Sciences 50A may 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) F, 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.

H90 The Idiom and Practice of Science (4). Lecture, three hours; discussion, two hours. Introduction to mathematical methodology and rigor. Students expected to follow elementary mathematical arguments and construct simple proofs. Topics may include game theory; mathematical treatment of the infinite; mathematics in politics and social sciences; cryptography and algebra; fractals. Open only to members of the Campuswide Honors Program. Formerly Mathematics H90A. **(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. Corequisite: Mathematics 105LA if offered. Prerequisites: Mathematics 2A-B-J; Mathematics 2C may replace 2J provided Mathematics 3A or 6C is taken prior to, or concurrent with, 105A. Some acquaintance with computer programming. Only one course from Mathematics 105A, Engineering CEE185, and Engineering MAE185 may be taken for credit. **105B:** Lagrange interpolation, finite differences, splines, Padé approximations; Gaussian quadrature; Fourier series and transforms. Corequisite: Mathematics 105LB if offered. Prerequisite: Mathematics 105A.

105LA-LB Numerical Analysis Laboratory (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). Lecture, three hours. 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 2D; 3D (or 2F); for 112B: Mathematics 112A or 146; for 112C: Mathematics 112B. Mathematics 112A and Mathematics 146 may not both be taken for credit.

114A-B Applied Complex Analysis (4-4). Lecture, three hours. 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 2C or 2J; 2D. Mathematics 2E, and 3D or 2F recommended. For 114B: Mathematics 114A. Mathematics 114A and Engineering ECE180 may not both be taken for credit.

115 Mathematical Modeling (4). Lecture, three hours. Mathematical modeling and analysis of phenomena that arise in engineering physical sciences, biology, economics, or social sciences. Corequisite or prerequisite: Mathematics 112A or Engineering MAE140. Prerequisites: Mathematics 2D; 2J or 3A or 6C; 2F or 3D.

118A-B-C Differential Equations (4-4-4). 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 2J; 2D; and either 2F or 3D, the latter being strongly recommended. Mathematics 2J can be replaced by either 2C plus 3A or by 2C plus 6C.

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. Prerequisite: Mathematics 3A or 6C.

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. 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. Prerequisites: Mathematics 3A or 6C; Mathematics 120A. Previous or concurrent enrollment in Mathematics 120B and 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; 2C or 2J.

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. Prerequisites: Mathematics 2A-B; 2C or 2J. Mathematics 2D recommended.

132A-B-C Discrete Probability and Mathematical Theory of Sample Surveys (4-4-4) F, W, S. Lecture, three 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; 2C or 2J.

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. Prerequisites: for 132B: Mathematics 132A; for 132C: Mathematics 132B.

***140A-B-C-D* Elementary Analysis (4-4-4-4) F, W, S, F.** Lecture, three 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. Prerequisites: Mathematics 2A-B; 2C or 2J; 2D; Mathematics 13 is strongly recommended. **140C:** Rigorous treatment of multivariable differential calculus. Jacobians, Inverse and Implicit Function theorems. Prerequisites: some background in linear algebra (Mathematics 3A, 6C, or 2J), and 140B. **140D:** Rigorous treatment of multivariable integral calculus. Multiple integrals in $\mathbf{R}^n$; iterated integrals and Fubini's theorem; change-of-variables theorem; differential forms and Stokes' theorem. Prerequisite: Mathematics 2E and 140C.

141A-B Introduction to Topology. Lecture, three hours. Strongly recommended for students planning to take graduate courses in mathematics.

141A Metric Spaces (4). Elements of naive set theory and the basic properties of metric spaces. Prerequisite: Mathematics 140A.

141B Point Set Topology (4). Introduction to topological spaces and topological properties. Prerequisite: Mathematics 141A or consent of instructor.

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.

150 Introduction to Mathematical Logic (4) F. Lecture, three hours. First-order logic through the Completeness Theorem for predicate logic. Prerequisite: consent of instructor. Only one course from Mathematics 150, Philosophy 105B, and Social Science 105B may be taken for credit.

151 Set Theory (4) W. Lecture, three hours. Axiomatic development; infinite sets; cardinal and ordinal numbers. Prerequisite: Mathematics 150. Only one course from Mathematics 151, Philosophy 105A, and Social Science 105A may be taken for credit.

152 Computability (4) S. Lecture, three hours. Computable functions; undecidability; Goedel's Incompleteness Theorem. Prerequisite: Mathematics 150. Only one course from Mathematics 152, Philosophy 105C, and Social Science 105C may be taken for credit.

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 2A-B; 2C or 2J; 2D-E; 3A or 6C or 2J.

171A-B-C Mathematical Methods in Operations Research. Lecture, three hours.

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.

180 Introduction to Number Theory (4). Lecture, three hours. 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; 2C or 2J.

182 Modern Geometry (4). Lecture, three hours. Euclidean geometry; Hilbert's axioms; absolute geometry; hyperbolic geometry; the Poincare models; geometric transformations. Prerequisites: Mathematics 2A-B; 2C or 2J; 2D; 3A or 6C or 2J; 120A.

184 History of Mathematics (4). Lecture, three hours. Topics vary from year to year. Some possible topics: mathematics in ancient times; the development of modern analysis; the evolution of geometric ideas. Students are assigned individual topics for term papers. Prerequisite: Mathematics 2A-B; 2C or 2J; 2D; 3A or 6C or 2J; 2F or 3D; 120A; 140A.

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.

189 Special Topics in Mathematics (4). Lecture, three hours. Offered from time to time, but not on a regular basis. Content and prerequisites vary with the instructor. May be repeated for credit as topics vary.

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.

192 Tutoring in Mathematics (2). Enrollment limited to upper-division Mathematics majors participating in the Department's Tutoring Program. Admission requires approval of Department Tutor Supervisor. For students *not* in the Department's specialization in Mathematics for High School Teaching, this course satisfies no requirements other than contribution to the 180 units required for graduation. Pass/Not Pass only. Prerequisites: Mathematics 2A-B; 2C or 2J; 2D; 3A or 6C or 2J; 13 or 120A or 140A. May be taken twice for credit.

194 Problem-Solving Seminar (4). Develops ability in analytical thinking and problem solving, using problems of the type found in the Mathematics Olympiad and the Putnam Mathematical Competition. Especially useful for high school mathematics teachers and for students planning to become such teachers. Pass/Not Pass only. NOTE: satisfies no requirement other than contribution to the 180 units required for graduation. May be taken twice for credit.

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. 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, Lp 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. Lecture, three hours. 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.

225A-B-C Introduction to Numerical Analysis and Scientific Computing (6-5-5). Lecture, three hours; laboratory, two hours in 225A, one hour in 225B-C. Introduction to fundamentals of numerical analysis from an advanced viewpoint. **225A:** Error analysis, approximation of functions, nonlinear equations. **225B-C:** Numerical linear algebra, numerical solutions of differential equations; stability. Prerequisites: Mathematics 3D; 105A-B or 140A-B; 121A; and Mathematics 112A or Engineering MAE140.

226A-B-C Computational Differential Equations (6-5-5). Lecture, three hours; laboratory: 226A: two hours; 226B-C: one hour. Finite difference and finite element methods. Quick treatment of functional and nonlinear analysis background: weak solution, Lp spaces, Sobolev spaces. Approximation theory. Fourier and Petrov-Galerkin methods; mesh generation. Elliptic, parabolic, hyperbolic cases in 226A-B-C, respectively. Prerequisites: basic differential equations, such as in Mathematics 3D and either Mathematics 112A or Mechanical and Aerospace Engineering MAE140; plus either abstract analysis (e.g., Mathematics 140A-B) or numerical analysis (105A-B or equivalent).

230A-B-C Algebra (4-4-4) F, W, S. Lecture, three hours. Elements of the theories of groups, rings, fields, modules. Galois theory. Modules over principal ideal domains. Artinian, Noetherian, and semisimple rings and modules. Prerequisites: Mathematics 120A and 121A-B or equivalent, or consent of instructor.

233A-B-C Algebraic Geometry (4-4-4). Lecture, three hours. Affine and projective varieties. Theory of schemes. Cohomology theory, algebraic cycles, theory of motives. Other topics as time permits. Prerequisite: Mathematics 230A-B-C. Knowledge of basic differential geometry and algebraic topology is helpful.

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, kernal, 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). Lecture, three hours. Continuation of Mathematics 280A-B-C. Topics to be conducted by the instructor. Prerequisite: Mathematics 280A-B-C or consent of instructor. May be repeated for credit as topics vary.

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). Lecture, three hours. Continuation of Mathematics 295A-B-C. Topics to be determined by the instructor. Prerequisites: Mathematics 295A-B-C or consent of instructor. May be repeated for credit as topics vary.

297 Mathematics Colloquium (1). Weekly colloquia on topics of current interest in mathematics. Satisfactory/Unsatisfactory Only. May be repeated for credit.

298A-B-C Seminar (1 to 3) F, W, S. Seminars organized for detailed discussion of research problems of current interest in the Department. The format, content, frequency, and course value are variable. Prerequisite: consent of the Department. May be repeated for credit.

299A-B-C Supervised Reading and Research (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.

COURSES IN PHYSICAL SCIENCES

50A-B-C Mathematical Methods in the Physical Sciences (4-4-4) F, W, S. 50A: Mathematica; complex numbers; linear algebra. **50B:** Partial differentiation; multiple integrals; vector analysis; curvilinear coordinates. **50C:** Probability; Fourier series; ordinary differential equations. Prerequisite for 50A: Mathematics 2C. Only one course from Physical Sciences 50A, Mathematics 3A, and Mathematics 6C may be taken for credit. Physical Sciences 50B and Mathematics 2D may not both be taken for credit. Only one course from Physical Sciences 50C, Mathematics 2F, and Mathematics 3D may be taken for credit.

114 Science Education Teacher Apprentice Field Experience (4) F, W, S. Students assist public school classroom teachers in laboratory demonstrations and experiments, tutoring individuals or small groups. Prerequisite: consent of instructor. Same as Education 114. May be taken for credit twice.

DEPARTMENT OF PHYSICS AND ASTRONOMY

4129 Frederick Reines Hall; (949) 824-6911
Gary A. Chanan, **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 and optics)
Gary A. Chanan, Ph.D. University of California, Berkeley, *Department Chair and Professor of Physics* (experimental astrophysics)
Liu Chen, Ph.D. University of California, Berkeley, *Professor of Physics* (plasma physics)
Michael B. Dennin, Ph.D. University of California, Santa Barbara, *Assistant Professor of Physics* (experimental condensed matter 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, *Professor of Physics* (experimental plasma physics)
Wilson Ho, Ph.D. University of Pennsylvania, *Professor of Physics and Chemistry, and Bren Chair* (experimental condensed matter, physics and chemistry)
Herbert Hopster, Ph.D. University of Aachen (Federal Republic of Germany), *Professor of Physics* (experimental surface physics)
Peter Horava, Ph.D. Czechoslovakian Academy of Sciences, *Assistant Professor of Physics* (theoretical particle physics)
Andrew Lankford, Ph.D. Yale University, *Professor of Physics* (experimental particle physics)
Jon M. Lawrence, Ph.D. University of Rochester, *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 Nosanow, Ph.D. University of Chicago, *Professor Emeritus of Physics* (condensed matter theory)
William H. Parker, Ph.D. University of Pennsylvania, *Vice Chancellor for Research and Dean of Graduate Studies, and Professor of Physics* (experimental low-temperature 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, *Professor of Physics* (experimental low-temperature physics)
Nathan Rynn, Ph.D. Stanford University, *Professor Emeritus of Physics* (experimental 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 and biophysics)
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* (experimental astrophysics)
Henry W. Sobel, Ph.D. Case Institute of Technology, *Professor of Physics* (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, *Professor of Physics* (condensed matter theory)
Gaurang B. Yodh, Ph.D. University of Chicago, *Professor of Physics* (particle astrophysics)
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.

Undergraduate Program

The goal of the undergraduate major in Physics is to develop expert problem solvers with a broad understanding of physical principles. The program is flexible and prepares students for careers in industrial research, applications programming, education, law, or business, as well as for graduate study in astronomy, biomedical physics, engineering, or physics. Annual mandatory meetings with faculty advisors assist students in selecting a program that matches their aptitudes and interests. In addition to the core Physics courses, students complete either a standard track (such as the track for future Ph.D. physicists), or one of the formal concentrations or specializations (in Applied Physics, Biomedical Physics, Computational Physics, Philosophy of Physics, Physics Education, or Astrophysics). In addition, Physics majors may find the minor in Earth and Atmospheric Sciences, offered by the Department of Earth System Science, to be of interest.

The three lower-division sequences in physics are distinguished by their intended audience, their mathematical prerequisites, and the extent to which they offer preparation for more advanced courses. These aspects of the beginning courses are summarized as follows:

Physics 3: *Intended audience:* Premedical students, Biological Sciences majors. *Prerequisites:* algebra and trigonometry; concurrent enrollment in Mathematics 2A. *Preparation for advanced courses:* Physics 7D with permission.

Physics 7: *Intended audience:* Physical Sciences and Engineering majors. *Prerequisite:* concurrent enrollment in Mathematics 2. *Preparation for advanced courses:* Physics 51A.

Physics 16–21: *Intended audience:* Nonscience majors. *Prerequisites:* none. *Preparation for Advanced courses:* none.

Admission to the Major

Students may be admitted to the Physics major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of approved calculus and one year of calculus-based physics with laboratory for engineering and physics majors.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: None.

Departmental Requirements

Physics 7A-B-D-E with laboratory courses 7LA-LB-LD; Mathematics 2A-B-D; Physical Sciences 50A-B-C; Physics 51A-B; Physics 52A-B-C; Physics 53 (or another programming course); Physics 111A-B, 112A-B, 113A, 115A, 121, and 125A; Physics 196C or H196C or 197; and six additional coherently related four-unit courses. (The six coherently related courses are normally satisfied by concentrations, specializations, and tracks.)

Concentration in Applied Physics

Requirements: The six additional coherently related courses required for the major must be in engineering and be approved by the Department of Physics and Astronomy.

Concentration in Biomedical Physics

Requirements: Biological Sciences 97, 98, and 99; Chemistry 1A-B-C, 1LB-LC, 51A-B, (or 52A-B).

Concentration in Computational Physics

Requirements: Three courses in computer science (Information and Computer Science 21, 22, 23), two courses in numerical analysis plus the accompanying laboratories (Mathematics 105A-B, 105LA-LB), and one advanced computational course (Mathematics 107, 107L or Physics 131). Mathematics 6A is also recommended as a prerequisite.

Concentration in Philosophy of Physics

Requirements: One course selected from Philosophy 30, 104, 105A-B-C (Social Science 30, 104, 105A-B-C), or Mathematics 150, 151, 152; Philosophy 31 (Social Science 31); Philosophy 140 or Social Science 130; one course from History 60, 135A, 135B, 135C, or an approved alternative elective; Physics 113B; three courses selected from Philosophy 102, Philosophy 121 (Social Science 110), Philosophy 141A, 141B, 141C, 141D (Social Science 131A, 131B, 131C, 131D).

Concentration in Physics Education

Requirements: Education 173; two quarters of Physical Sciences 114 and/or Physics 191; five courses selected from Biological Sciences 1A-B, Chemistry 1A-B-C, Earth System Science 14, 20F, 101A, Physics 20A-B.

Specialization in Astrophysics

Requirements: Three astrophysics courses (Physics 137, 144, 145) and any two of the four special topics courses (Physics 132, 134, 135, 136).

Honors Program in Physics

The Honors Program in Physics provides an opportunity for selected students majoring in Physics to pursue advanced work in one of the research areas of the Department. Admission to the program is based on an application normally submitted by the sixth week of the spring quarter of the junior year. Applicants must have an overall grade point average of at least 3.4 and a grade point average in physics courses of 3.5 or better. (Exceptions to these procedures and standards may be granted in unusual circumstances.) In selecting students for the program, the Department considers evidence of ability and interest in research.

Students admitted to the program participate in a year-long course, Physics H196A-B-C, which includes two quarters of research and a final quarter in which a written thesis is submitted. If this work and the student's final GPA are deemed of honors quality by the program advisor, the student then graduates with Departmental Honors in Physics.

PLANNING A PROGRAM OF STUDY

Physics 3 is a one-year course suitable for premedical students, students majoring in Biological Sciences, and nonscience majors. It surveys most of the important branches of physics. Laboratory work accompanies the course. Nonscience majors with some mathematical skill may wish to consider Physics 3 as an alternative to Physics 16 through 21.

A student who decides to major in Physics after completing Physics 3 should meet with the Department Undergraduate Advisor for placement information.

Physics 7 is an intensive four-quarter course for students in Physical Sciences and Engineering who are interested in a careful quantitative approach to macroscopic physics. Laboratory work accompanies the course. Students with an advanced background in physics may begin the sequence with 7B upon satisfactory completion of the Physics Placement Examination.

Physics courses numbered between 16 and 21 are general education courses intended for nonscience majors. The content and format of Physics 21 may vary from year to year.

The introduction to mathematical methods (Physical Sciences 50A-B-C), microscopic physics (Physics 51A-B), and experimental physics (Physics 52A-B-C) are normally taken in the sophomore year.

Courses numbered 111 and above are for Physics majors and other qualified students. Courses numbered between 111 and 115 emphasize the mathematical and theoretical structures that have unified our understanding of nature. It should be noted that multi-quarter courses such as 111A-B must be taken and passed in sequential order. Any student who is so inclined may take more than the minimum one quarter of advanced laboratory work. Courses numbered between 132 and 149 introduce active subdisciplines in current research. Independent research (195, 196) is strongly encouraged. Physics 196C, H196C, and 197 stress the written and verbal communication of research findings.

Transfer students are specifically advised to seek individual consultation with the Department Undergraduate Advisor before deciding on a program of courses.

All Physics majors must complete the core courses listed below. By the end of the junior year, each student must also select a concentration or track.

Note that alternatives to Physics major requirements can be approved upon petition to the Department and the Office of the Associate Dean. Furthermore, exceptionally prepared students are allowed to enroll in graduate-level courses; to do so requires the approval of the Physics and Astronomy Department Undergraduate Committee.

Sample Program — Physics Core Curriculum

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7C, 7LC
Sophomore		
Physical Sciences 50A	Physical Sciences 50B	Physical Sciences 50C
Physics 7D	Physics 51A	Physics 51B
Physics 52A	Physics 52B	Physics 52C
		Physics 53
Junior		
Physics 111A	Physics 111B	Physics 113A
Physics 112A	Physics 112B	Physics 115A
Senior		
Physics 125A	Physics 121	Physics 197

For a student planning graduate study in physics, additional courses in advanced physics are strongly recommended.

Sample Program — Physics Graduate School Track

FALL	WINTER	SPRING
Senior		
Physics 113B	Physics 113C	Physics 115B
Physics Elective	Physics 125B	Physics Elective

Students preparing for graduate school in atmospheric science or physical oceanography should complete the minor in Earth and Atmospheric Sciences.

The **Applied Physics concentration** is designed to provide appropriate education to students who anticipate a career in industrial or technological research. It combines the fundamental knowledge of physical processes obtained from physics courses with the technical knowledge obtained from engineering courses. A student is required to complete six courses in the School of Engineering approved by the Physics and Astronomy Department. Examples of appropriate courses include Engineering ECE70, ECE113A and 113LA, ECE113B and 113LB, ECE113C and 113LC, ECE114A, ECE114B, ECE176, ECE178, MAE120, MAE135, and MAE147. Upon completion of the Applied Physics concentration, the student will receive a B.S. degree in Physics.

Sample Program — Applied Physics Concentration

FALL	WINTER	SPRING
Junior		
	Engr. ECE70A	Engr. ECE70B, 70LB
Senior		
Engr. ECE113A, LA	Engr. ECE113B, LB Engr. ECE178	

The **Biomedical Physics concentration** is designed for the student who anticipates a career in physics applied to biology and medicine, such as health physics or radiological physics, or who intends to work in a scholarly field which deals with the physical aspects of biology or medicine, such as molecular biology or physiology. Completion of requirements for the Physics major is required as are nine quarters of basic courses in biology and chemistry. Students who wish to follow the Biomedical Physics concentration are advised to seek guidance early in their college careers. The requirements are such that coordination of a program in the second year is essential.

Sample Program — Biomedical Physics Concentration

FALL	WINTER	SPRING
Freshman		
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Sophomore		
Chemistry 51A	Chemistry 51B	
Junior		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99

The **Computational Physics concentration** provides training for positions in software development in a wide variety of high-technology fields. For example, consider medical imaging software for magnetic resonance imaging. To write a first-rate program, one must understand the apparatus and analysis techniques (physics), use appropriate numerical techniques (numerical analysis), and employ a convenient object-oriented interface (computer science). The concentration develops this unique set of skills: physical and mathematical insight through the Physics curriculum, knowledge of modern computer programming techniques, and knowledge of numerical analysis.

Sample Program — Computational Physics Concentration

FALL	WINTER	SPRING
Junior		
ICS 21	ICS 22	ICS 23
Senior		
Math. 105A, 105LA	Math. 105B, 105LB	Math. 107, 107L

The **Philosophy of Physics concentration** is concerned with the study of the conceptual history of physics, the method of inquiry that has led to our best physical theories, and the structure and interpretation of the theories themselves. Students take courses in deductive and inductive logic, the philosophy and history of physics, and quantum mechanics. The emphasis on careful argument makes this concentration useful for anyone who wishes to pursue a graduate degree in philosophy or law, or for other careers that employ both verbal and quantitative analysis.

The **Physics Education concentration** is for students who plan a career in secondary education. An Education course, five general science courses, and two quarters of classroom experience complete the requirements for the concentration.

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 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 — Astrophysics Specialization

FALL	WINTER	SPRING
Junior		
	Physics 144 or 145	Physics 137
Senior		
Physics 113B	Physics 144 or 145	Physics 115B
Physics 135	Physics 125B	Physics 136

Graduate Program

The Department offers the M.S. and Ph.D. degrees in Physics. These degrees are awarded in recognition of demonstrated knowledge of the basic facts and theories of physics and of a demonstrated capacity for independent research. Active programs of research are underway in high-energy physics, condensed matter physics, low-temperature physics, plasma physics, gravitational physics, and astrophysics.

In general, graduate study in the physics Ph.D. program is expected to be a full-time activity. Other proposed arrangements should be approved by the Graduate Committee. Completion of the Ph.D. typically requires six years of full-time study. Students may pursue the M.S. degree on either a full-time or part-time basis.

Complementing the formal courses, the Department offers regular colloquia and informal seminars. Graduate students are members of an intellectual community and are expected to participate fully in departmental activities. Attendance at colloquia is considered an essential part of graduate study. In addition, there are regular weekly research seminars in condensed matter, high-energy, and plasma physics, and astrophysics.

Sources of support available to graduate students include teaching assistantships, research assistantships, and fellowships. Students planning to pursue graduate work in Physics should obtain a copy of the Department's graduate brochure.

Students admitted into the graduate program in Physics and Astronomy may elect to pursue the M.S. or Ph.D. degree with a concentration in Chemical and Materials Physics, as described in a later section.

MASTER OF SCIENCE IN PHYSICS

The requirements for the M.S. degree are (1) at least three quarters of residence; (2) mastery of graduate course material, which must be demonstrated by passing, with a grade of B or better, a minimum of eight quarter courses including Physics 211, 213A-B, 215A, 223, and at least one other course numbered between 200 and 259; and (3) either Option A, a research project and written thesis, or Option B, a comprehensive written examination.

A typical program of study for the M.S. degree consists of the following nine courses: Physics 211 (Classical Mechanics), 213A-B (Electromagnetic Theory), 215A (Quantum Mechanics), 223 (Numerical Methods), 224 (Discoveries and Inventions of Modern Physics), 206 (Laboratory Skills) for experimentalists or 212 (Mathematical Physics) for theorists, plus two electives chosen from Physics 215B or undergraduate upper-division courses in related areas.

(The requirements for the M.S. degree with a concentration in Chemical and Materials Physics differ from these.)

DOCTOR OF PHILOSOPHY IN PHYSICS

The principal requirements for the Ph.D. degree are a minimum of six quarters of residence, passage of a written and 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.

Course Requirements. Students are required to exhibit mastery of the basic sequences—Classical Mechanics, Electromagnetic Theory, Quantum Mechanics, and Statistical Physics. A minimum of 12 quarter courses including 211, 213A-B, 214A, 215A-B, 223, and at least three other courses numbered between 200 and 259, must be passed with a grade of B or better. Students are strongly encouraged to take Physics 211, 213A-B, 214A, 215A-B, 223, and 206 (for experimentalists) or 212 (for theorists) in their first year of study. 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) in their second year of study.

(The requirements for the Ph.D. degree with a concentration in Chemical and Materials Physics differ from these, as outlined on the next page.)

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 Ph.D. 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.

CONCENTRATION IN CHEMICAL AND MATERIALS PHYSICS

This is an interdisciplinary program between condensed matter physics and physical chemistry which is designed to eliminate the barrier between these two disciplines. Students with B.S. degrees in Physics, Chemistry, or Materials Science and Engineering, are encouraged to apply to the program. The goal of the concentration in Chemical and Materials Physics (ChaMP) is to provide students with a broad interdisciplinary education in the applied physical sciences that emphasizes modern laboratory and computational skills. The program accepts students for both the M.S. and the Ph.D. degrees. Upon admission to the program, students are assigned two faculty advisors, one from the Department of Physics and Astronomy, and one from the Department of Chemistry, to provide guidance on curriculum and career planning.

The curriculum for the M.S. program includes a summer session to assimilate students with different undergraduate backgrounds; formal shop, laboratory, and computational courses; a sequence on current topics to bridge the gap between fundamental principles and applied technology; and a course to develop communication skills. The core courses are: Physics 206, 207, 213C, 226, 228, 229A-B, 266, 273; Chemistry 213, 231A-B-C, 232A-B-C, 236. In addition to the core, M.S. students complete four electives approved by the student's Advisory Committee and a master's thesis. The M.S. program prepares students to compete for high-tech jobs or to begin research leading to a Ph.D.

Successful completion of the M.S. degree requirements qualifies students for the Ph.D. program. A candidacy examination consisting of an original research proposal and a research progress report is expected to be completed within a year of starting the Ph.D. program.

Courses in Physics

LOWER-DIVISION

NOTE: The Department of Physics and Astronomy strictly enforces all course prerequisites. Courses with sequential designations (for example, 1A-B-C) indicate multiple-quarter courses; *each course in a sequence is prerequisite to the one following.*

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 1B or 2A. Physics 1 and Physics 7A may not both be taken for credit. *Not offered 2000-2001.*

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. **(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. Prerequisites: Physics 1 or satisfactory score on Physics Placement Examination; Mathematics 2A. 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 with the exception of Physics 5A (laboratory requirement may be waived by consent of instructor). Students may not receive credit for more than one section within the following sets of courses: Physics 5A and 7A; Physics 5B and 7B-E; Physics 5C and 7D; Physics 5D and 51A; Physics 5E and 51B. (Physics 5A-B-C: **II**) *Physics 5A-B not offered 2000-2001.*

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. Students may not receive credit for both sections of the following pairs of courses: Physics 5LC and Physics 52B; Physics 5LD and Physics 52A; Physics 5LE and Physics 52C. (Physics 5LB-LC: **II**) *Physics 5LB not offered 2000-2001.*

7A-B-D-E Classical Physics (4-4-4-4) F, W, S, F. Lecture, three hours; discussion, one hour. **7A:** Units; vectors; motion; force. **7B:** Energy; momentum; rotation; gravity. **7D:** Electricity and magnetism. **7E:** Fluids; oscillations; waves; optics. Corequisites for 7A-B-D: corresponding quarters of Physics 7LA-LB-LD; Mathematics 2A-B and 2C or 2D. Students may not receive credit for more than one section within each of the following sets of courses: Physics 7A and 1 and 5A; Physics 7B and 5B; Physics 7E and 5B; Physics 7D and 5C. **(II)**

7LA-LB-LD Classical Physics Laboratory (1-1-1) F, W, S. Laboratory, two hours. Experiments related to lecture topics in Physics 7A-B-D. Corequisite: corresponding quarter of Physics 7A-B-D.

COURSES FOR NON-MAJORS

Course numbers between 16 and 21 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 or Physics 3A-B. **(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, 5A-B-C-D-E, 7A-B-D-E, or equivalent. **(II)**

18 How Things Work (4) S. Lecture, three hours. Survey of the physical basis of modern technology, with an emphasis on electronics and materials. Topics include power generation and distribution, communication (radio, TV, telephone, computers, tape recorders, CD players), imaging (optics, x-rays, MRI), and modern materials (alloys, semiconductors, superconductors, polymers, ceramics, liquid crystals). **(II)**

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 Observational Astronomy (4). Lecture, three hours; discussion, one hour. Fundamental observational techniques used in astronomy, including the analysis and interpretation of images and spectra that allow students to determine orbits of planets and moon, time evolution of supernovae, ages of star clusters, Hubble's Law. Naked-eye observations of the night sky. Observations of stars and galaxies with the UCI 24-inch telescope. Current events in observational astronomy. Prerequisites: Physics 20A, 20B. **(II)**

20D Space Science (4) S. Motions of planets, satellites, and rockets. Propulsion mechanisms and space flight. The solar radiation field and its influence on planets. The interplanetary medium, solar wind, and solar-terrestrial relations. **(II)**

21 Special Topics in Physics (4). Lecture, three hours. Topics vary. Past topics have included physics and music, Newton, planetary science. Lectures on areas of special interest in physics are used to introduce students to scientific method, fundamental laws of science, qualitative and quantitative analysis of data. May be repeated for credit as topics vary. **(II)**

ADVANCED LOWER-DIVISION

51A-B Modern Physics (4-4) W, S. Lecture, three hours; discussion, one hour. **51A:** Wave-particle duality; quantum mechanics; special relativity; statistical mechanics. Prerequisites: Physics 7D and Mathematics 2C. **51B:** Atoms; molecules; solids, nuclei; elementary particles. Students may not receive credit for both sections of the following pairs of courses: Physics 51A and Physics 5D; Physics 51B and Physics 5E.

52A-B-C Fundamentals of Experimental Physics (2-2-2) F, W, S. Laboratory, four hours. **52A:** Optics: lenses, mirrors, polarization, lasers, optical fibers, interference, spectra. Corequisite: Physics 7E. **52B:** Circuits: oscilloscope, meters, DC and AC circuits. Prerequisite: Physics 7D. **52C:** Data analysis: random and systematic errors, curve fitting; nuclear counting; quantum experiments. Prerequisite: Physics 51A. Students may not receive credit for both sections of the following pairs of courses: Physics 52A and Physics 5LD; Physics 52B and Physics 5LC; Physics 52C and Physics 5LE.

53 Introduction to C and Numerical Analysis (4) S. Introduction to structured programming; in-depth training in C. Elementary numerical methods applied to physics problems. Prerequisites: Physical Sciences 50A-B-C, or Mathematics 3A and either Mathematics 3D or 2F.

H90 The Idiom and Practice of Science (4) W. Lecture, three hours; discussion, two hours. A series of fundamental and applied scientific problems of social relevance. Possible topics include Newton's Laws, calculus, earthquake physics, and radiation. Open only to members of the Campuswide Honors Program. Formerly Physics H90A. **(II)**

UPPER-DIVISION

111A-B Classical Mechanics (4-4) F, W. Lecture, three hours; discussion, one hour. One dimensional motion and oscillations; three-dimensional motion, non-inertial coordinates, conservation laws, and Lagrangian and Hamiltonian dynamics; rigid body motion and relativity. Prerequisites: Physics 5D or 7E; Physical Sciences 50C.

112A-B Electromagnetic Theory (4-4) F, W. Lecture, three hours; discussion, one hour. Electric, magnetic, and gravitational fields and potentials; electrodynamics; mechanical and electromagnetic waves and radiation. Prerequisites: Physics 5D or 7E; Physical Sciences 50C.

113A-B-C Quantum Physics (4-4-4) S, F, W. Lecture, three hours; discussion, one hour. Inadequacy of classical physics; time independent and time dependent Schrodinger equation; systems in one, two, and three dimensions; matrices; Hermitian operators; symmetries; angular momentum; perturbation theory; scattering theory; applications to atomic structure; emphasis on phenomenology. Prerequisites: Physics 111B and 112B.

115A Statistical Physics (4) S. Lecture, three hours. Microscopic theory of temperature, heat, and entropy; kinetic theory; multicomponent systems; quantum statistics. Prerequisites: Physics 5E or 51B, and 111A.

115B Thermodynamics (4) S. Lecture, three hours. Macroscopic theory of temperature, heat, and entropy; mathematical relationships of thermodynamics; heat engines; phase transitions. Prerequisite: Physics 115A. Formerly Physics 116.

120 Electronics for Scientists (4) F. Lecture, two hours; laboratory, four hours. Applications of modern semiconductor devices to physical instrumentation. Characteristics of semiconductor devices, integrated circuits, analog and digital circuits. Prerequisite: Physics 52B or consent of instructor.

121 Advanced Laboratory (4) W, S. Lecture, one hour; laboratory, eight hours. Experiments in atomic, condensed matter, nuclear, particle, and plasma physics. Introduction to instrumentation and a first experience in the research laboratory. Prerequisite: Physics 113A. May be taken for credit three times.

125A Mathematical Physics (4) F. Lecture, three hours; discussion, one hour. Complex functions, calculus of variations, integral equations. Prerequisite: Physics 113A.

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.

131 Special Topics in Computational Physics (4). Lecture, three hours. Modern symbolic and numerical techniques on state-of-the-art computers for solving problems in classical and quantum mechanics, fluids, electromagnetism, and mathematical physics. Prerequisites: Physics 53, 113A, and 115A. May be repeated for credit as topic varies. Concurrent with Physics 231.

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 115A.

134 Introduction to Modern Optics (4) W of odd years. Lecture, three hours. Interaction of radiation with matter; lasers; nonlinear optics; optical properties of solids; absorption and scattering of light; modern spectroscopic techniques. Corequisite: Physics 112B. Prerequisites: Physics 51B and 112A.

135 Introduction to Plasma Physics (4) F. Lecture, three hours. Ionization and discharge mechanisms; microscopic motions and kinetic equations; macroscopic fluid theories; electrodynamics of plasma; waves and instabilities; examples of laboratory and cosmic phenomena. Prerequisite: Physics 112B.

136 Introduction to Particle Physics (4) 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 Hertzprung-Russell diagram, stellar classification, and physical principles responsible for the classification; star formation; nuclear burning; giant and dwarf stars; neutron stars and black holes. Prerequisites: Physics 5E or 51B, and 111A and 112A.

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. Prerequisites: Physics 5E or 51B, and 111A and 112A.

147 Physics Principles in Biology and Medicine. Physical principles in biology and medicine with examples from physiology and medical diagnostics and therapeutics. Prerequisites: basic physics with calculus; Physics 5E or 51B or equivalent.

147A-B (4-4). A: Principles of imaging. **B:** Ionizing radiation, radiology and nuclear medicine, magnetism and MRI, acoustics and ultrasound. Prerequisite for 147B: Physics 147A.

147C (4). Biophysics of light, thermal and microwave radiations, hydrodynamics, bioelectricity, biomagnetism and electrophysiology.

EDUCATION

191 Field Experience in Physics Education (4) F, W, S. Students develop and perform physics assemblies at neighboring public schools. Prerequisites: Physics 7B-D-E or equivalent. Pass/Not Pass only. May be taken for credit twice.

192 Tutoring in Physics (1 to 2). Enrollment limited to students participating in the Society of Physics Students (SPS) tutoring program. This course satisfies no requirements other than contribution to the 180 units required for graduation. No more than 12 units may be counted toward the 180 units required. Prerequisite: Physics 7E or 5E or consent of instructor.

RESEARCH

195 Undergraduate Research (4). Open to seniors and occasionally to juniors with consent of the Department. Pass/Not Pass Only.

196A-B-C Thesis in Physics (4-4-4) F, W, S. Independent research conducted under the guidance of a faculty member. Students' research results are discussed in oral presentations, and a written proposal, progress report, and thesis are submitted. Prerequisites: Physics 113A and consent of instructor; prerequisite for 196C: satisfactory completion of the lower-division writing requirement. Physics 196A-B-C and H196A-B-C may not both be taken for credit. Physics 196C and 197 may not both be taken for credit.

H196A-B-C Honors Thesis in Physics (4-4-4) F, W, S. Independent research conducted under the guidance of a faculty member. Students' research results are discussed in oral presentations, and a written proposal, progress report, and thesis are submitted. Prerequisite for H196C: satisfactory completion of the lower-division writing requirement. Open only to participants in the Honors Program in Physics and to Physics majors participating in the Campuswide Honors Program. Physics H196A-B-C and 196A-B-C may not both be taken for credit. Physics H196C and 197 may not both be taken for credit. Formerly Physics H195, H196.

197 Research Writing for Physics Majors (4) S. Students perform a research project under the guidance of a faculty member. Written and oral proposals, a progress report, and written and oral final reports are completed. Prerequisites: Physics 111A-B, 112A-B, 113A, 115A, and satisfactory completion of the lower-division writing requirement. Only one course from Physics 197, 196C, and H196C may be taken for credit.

199 Readings on Special Topics (4). With consent of the Department. Pass/Not Pass Only.

GRADUATE

206 Laboratory Skills (4 to 6). Lecture, three hours; laboratory, six to ten hours. Introduces students to a variety of practical laboratory techniques, including lock-in, boxcar, coincidence counting, noise filtering, PID control, properties of common transducers, computer interfacing to instruments, vacuum technology, laboratory safety, basic mechanical design, and shop skills. Prerequisite: consent of instructor. Same as Chemistry 206.

207 Chemistry for Physicists (4). Lecture, three hours.; discussion, one hour. Introduction to fundamental concepts in molecular structure and reactivity: theory of bonding, valence and molecular orbitals; structure and reactivity in inorganic chemistry, elements in molecular group theory, nomenclature in organic chemistry; and survey of macromolecules. Same as Chemistry 207.

211 Classical Mechanics (4) F. Lecture, three hours. Variational principles, Lagrange's equations; applications to two body problems, small oscillation theory, and other phenomena. Hamilton's equations. Hamilton-Jacobi theory. Canonical transformations.

212A-B Mathematical Physics (4-4) S, F. Lecture, three hours. **212A:** Complex variables and integration; ordinary and partial differential equations; the eigenvalue problem. **212B:** Integral transforms; integral equations; probability and statistics; tensor analysis.

213A-B Electromagnetic Theory (4-4) W, S. Lecture, three hours. Electrostatics; magnetostatics; relativity; classical electron theory; fields in vacuum and matter; retardation; radiation and absorption; dispersion; propagation of light; diffraction; geometric optics; theories of the electric and magnetic properties of materials; scattering.

213C Modern Optics (4) 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) S, F. Lecture, three hours. **214A:** Maxwell-Boltzmann, Bose-Einstein, Fermi-Dirac statistics; ideal and imperfect gases; thermodynamic properties of solids; transport theory. **214B:** Phase transitions; critical phenomena; cooperative phenomena; fluctuations.

214C Many Body Theory (4). Application of field theory methods, perturbative and non-perturbative to many particle systems; second quantization, Feynman diagrams, linear response theory, and functional integral methods applied to the ground state and at finite temperature. Prerequisites: Physics 214A-B.

215A-B-C Quantum Mechanics (4-4-4) F, W, S. Lecture, three hours. **215A:** Foundations; Dirac notation; basic operators and their eigenstates; perturbation theory; spin. **215B:** Atomic physics; scattering theory, formal collision theory; semi-classical radiation theory; many body systems. **215C:** Quantization of the electromagnetic field; relativistic quantum mechanics; second quantization.

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.

223 Numerical Methods (4). Lecture, three hours; laboratory, one hour. Introduction to theory and practice of modern numerical methods. Techniques are drawn from topics such as solution of differential equations, Monte Carlo methods, Fast Fourier transforms, and evaluation of special functions.

224 Discoveries and Inventions of Modern Physics (4). Lecture, three hours; discussion, one hour. Introduction to physical phenomenology intended to complement the more formal traditional physics curriculum, with topics drawn from atomic and nuclear physics, condensed matter, particle physics, plasma physics, and astrophysics.

228 Electromagnetism (4). Lecture, three hours; discussion, one hour. Maxwell's equations, electrodynamics, electromagnetic waves and radiation, wave propagation in media, interference and quantum optics, coherent and incoherent radiation, with practical applications in interferometry, lasers, waveguides, and optical instrumentation. Prerequisite: consent of instructor. Same as Chemistry 228.

229A-B Computational Methods (4). Lecture, three hours; laboratory, six hours. Mathematical and numerical analysis using Mathematica and C programming, as applied to problems in physical science. Prerequisite: consent of instructor. Same as Chemistry 229A-B.

231 Special Topics in Computational Physics (4). Lecture, three hours. Modern symbolic and numerical techniques on state-of-the-art computers for solving problems in classical and quantum mechanics, fluids, electromagnetism, and mathematical physics. Concurrent with Physics 131. May be repeated for credit as topic varies. Formerly Physics 231A.

232A-B Applications of Group Theory (4-4). 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.

233A-B Fundamentals of Biomedical Imaging Systems (4-4) F, W. Lecture, three hours. Physical principles and methods of biomedical imaging systems. Linear systems, random processes, projection imaging, computed tomography, x-rays, nuclear medicine, ultrasound, optical imaging, NMR, EEG, MEG imaging and impedance tomography. Same as Engineering ECE237A-B and Radiological Sciences 201A-B.

235A-B Advanced Quantum Mechanics (4-4) F, W. Lecture, three hours. **235A:** Lagrangian formalism, second quantization, interacting fields, perturbation theory. **235B:** 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; black holes, 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; F, W. Lecture, three hours. **239A:** Descriptions of plasma parameter, Debye length, kinetic and fluid equations, Coulomb collisions. **239B:** Magnetic confinement. Orbits, equilibrium, transport, radiation. **239C:** Linear waves and instabilities. Vlasov waves in uniform magnetized and unmagnetized plasmas; Landau damping; nonuniform plasma. **239D:** Nonlinear plasma physics. Quasilinear theory, finite-amplitude coherent waves, resonance broadening, strong turbulence. A-B sequence and C-D sequence offered alternate years; student may enter course any fall quarter.

246 Special Topics in Astrophysics (4) F, W, S. Lecture, three hours. Outlines and emphasizes a subarea of astrophysics that is undergoing rapid development. Prerequisites: Physics 236A-B-C or consent of instructor. May be repeated for credit.

247 Special Topics in 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.

248 Special Topics in Condensed Matter Physics (4) F, W, S. Lecture, three hours. Outlines and emphasizes a subarea of condensed matter physics that is undergoing rapid development. May be repeated for credit.

249 Special Topics in Plasma Physics (4) F, W, S. Lecture, three hours. Outlines and emphasizes a subarea of plasma physics that is undergoing rapid development. Satisfactory/Unsatisfactory only. Prerequisites: Physics 239A-B-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 (1-1-1) F, W, S. Seminar designed to acquaint students with recent advances in solid state physics. Lecturers from the Department of Physics and Astronomy (both faculty and graduate students), other UCI departments, and other institutions. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

261A-B-C Seminar in Plasma Physics (1-1-1) F, W, S. Advanced topics in plasma physics: wave propagation, nonlinear effects, kinetic theory and turbulence, stability problems, transport coefficients, containment, and diagnostics. Applications to controlled fusion and astrophysics. Satisfactory/Unsatisfactory only. Prerequisites: Physics 239A-B-C-D or equivalent.

263A-B-C Seminar in High-Energy Physics (1-1-1) F, W, S. Discussion of advanced topics and reports of current research results in theoretical and experimental high-energy physics and cosmic rays. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

264 Seminar in Conceptual Physics (1) S. Discussion of physics as an interrelated discipline. Practice in oral presentation of ideas and problems. Satisfactory/Unsatisfactory only. May be taken twice for credit.

265A-B-C Seminar in Astrophysics (1-1-1) F, W, S. Acquaints students with current research in astrophysics. Lecturers from the Department of Physics and Astronomy and from other institutions. Satisfactory/Unsatisfactory only. May be repeated for credit.

266 Current Topics in Chemical and Materials Physics (4). Lecture, three hours; discussion, one hour. The subjects covered vary from year to year. Connection between fundamental principles and implementations in practice in science, industry, and technology. Prerequisite: consent of instructor. Same as Chemistry 266.

267A-B-C Current Problems in 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.

273 Technical Communication Skills (2). Lecture, one hour; discussion, three hours. Development of effective communication skills, oral and written presentations, through examples and practice. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor.

295 Experimental Research (4 to 12). With the approval of a faculty member, a student may pursue a research program in experimental physics. Typical areas include astrophysics, condensed matter physics, elementary particle physics, and plasma physics.

296 Theoretical Research (4 to 12). With approval of a faculty member, a student may pursue a research program in theoretical physics. Typical areas include astrophysics, condensed matter physics, elementary particle physics, and plasma physics.

298 Physics Colloquium (1). Seminar held each week, in which a current research topic is explored. Frequently, off-campus researchers are invited to present the seminar, and on occasion a faculty member or researcher from the Department will speak. Satisfactory/Unsatisfactory only. May be repeated for credit.

299 Reading of Special Topic (4 to 12). With special consent from a faculty member who will agree to supervise the program, a student may receive course credit for individual study of some area of physics.

399 University Teaching (1 to 4) F, W, S. Required of and limited to Teaching Assistants.

SCHOOL OF SOCIAL ECOLOGY

C. Ronald Huff, **Dean**

300 Social Ecology I
Undergraduate Counseling: (949) 824-6861
Graduate Counseling: (949) 824-5917
World Wide Web: http://www.seweb.uci.edu/

Faculty

Phyllis F. Agran, M.D. University of California, Irvine, M.P.H. Harvard University, *Professor of Pediatrics and Social Ecology*

Hoda Anton-Culver, Ph.D. St. Andrews University (Scotland), *Professor of Medicine (Epidemiology and Preventive Medicine) and 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, Community and Environmental Medicine, and Social Ecology*

Mark Baldassare, Ph.D. University of California, Berkeley, *Professor of Social Ecology, and Roger W. and Janice M. Johnson Chair in Civic Governance: The Social Ecology of Public Management* (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, *Associate Professor of Social Ecology and Economics* (urban economics, urban planning, urban economic development)

Scott A. Bollens, Ph.D. University of North Carolina, *Chair of the Department of Urban and Regional Planning and 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*

Peter A. Bowler, Ph.D. University of California, Irvine, *Director of the UCI Arboretum, UC Natural Reserve System Academic Coordinator, and Associate Adjunct Professor of Ecology and Evolutionary Biology and 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, *Professor of Social Ecology* (sociology of law, criminology, social deviance, immigration, and inequality)

Chuansheng Chen, Ph.D. University of Michigan, *Associate 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, epidemiology and public health)

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* (evaluation research and social psychology, health promotion)

Thomas J. Crawford, Ph.D. Harvard University, *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, Ph.D. McGill University (Canada), *Assistant Clinical Professor of Medicine and Social Ecology*

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)

Peter Ditto, Ph.D. Princeton University, *Associate Professor of Social Ecology* (psychological reactions to medical diagnoses, end-of-life medical decision making, the role of motivation and emotion in information processing)

John D. Dombrink, Ph.D. University of California, Berkeley, *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, *Chair (Interim) of the Department of Environmental Analysis and Design and Professor of Social Ecology* (environmental health science; archaeological chemistry)

Paul J. Feldstein, Ph.D. University of Chicago, *Professor of Management, Economics, and Social Ecology, and Robert Gumbiner Chair in Health Care Management* (economics of health care)

Paula Garb, Ph.D., U.S.S.R. Academy of Sciences, *Associate Director of Global Peace and Conflict Studies, and Associate Adjunct Professor of Social Sciences and Social Ecology*

Gilbert L. Geis, Ph.D. University of Wisconsin, *Professor Emeritus of Social Ecology* (crime and criminal justice)

Amihai Glazier, Ph.D. Yale University, *Professor of Economics and Social Ecology*

Wendy A. Goldberg, Ph.D. University of Michigan, *Associate Professor of Social Ecology* (developmental psychology, children and their families, transition to parenthood, social policy)

Lisa Grant, Ph.D. California Institute of Technology, *Assistant Professor of Social Ecology* (earthquake geology, paleoseismology, environmental geology, seismic hazard)

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 Professor of Medicine (General Internal Medicine and Primary Care) and Social Ecology*

C. Ronald Huff, Ph.D. Ohio State University, *Dean of the School of Social Ecology and Professor of Social Ecology* (criminology and public policy)

Helen Ingram, Ph.D. Columbia University, *Professor of Social Ecology and of Political Science, 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, *Associate Professor of Social Ecology* (health psychology, psychophysiology, algology)

Valerie Jenness, Ph.D. University of California, Santa Barbara, *Associate Professor of Social Ecology and Sociology* (links between divorce and social control, especially law, gender, and social change and social movements)

Paul D. Jesilow, Ph.D. University of California, Irvine, *Associate Professor of Social Ecology* (crime and criminal justice)

Chenyang (Sunny) Jiang, Ph.D. University of South Florida, *Assistant Professor of Social Ecology* (marine science, microbial ecology in marine environments)

Michael T. Kleinman, Ph.D. New York University, *Adjunct Professor of Community and Environmental Medicine and of Social Ecology*

Richard Leo, University of California, Berkeley, *Assistant Professor of Social Ecology* (sociology and history of American police interrogation practices, social psychology of false confessions to police, causes and consequences of miscarriage of justice in American criminal justice system)

Linda J. Levine, Ph.D. University of Chicago, *Associate 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)

Richard Matthew, Ph.D. Princeton University, *Assistant Professor of Social Ecology and Political Science* (international relations, environmental policy, ethics)

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)
James W. Meeker, Ph.D., J.D. State University of New York, Buffalo, *Associate Dean of Student Affairs, School of Social Ecology, and Professor of Social Ecology* (sociology of law, criminal justice, research methodology, statistics)
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, *Associate 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 and of Community and Environmental Medicine* (aquatic microbiology, environmental health and molecular biology, water resources)
Cornelia Pechmann, Ph.D. Vanderbilt University, *Associate Professor of Management and Social Ecology* (consumer behavior, advertising strategy, health care marketing, evaluation research)
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)
Kenneth L. Pomeranz, Ph.D. Yale University, *Department Chair and Professor of History and Professor of East Asian Languages and Literatures and of Social Ecology*
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* (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, *Chair of the Department of Psychology and Social Behavior and 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)
Roxane Cohen Silver, Ph.D. Northwestern University, *Associate Dean for Research, School of Social Ecology, and Professor of Social Ecology* (stress and coping, social psychology, health psychology)
Kenneth A. Small, Ph.D. University of California, Berkeley, *Professor of Economics and Social Ecology*
David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Professor of Sociology and Social Ecology* (urbanization, comparative historical sociology, political sociology, world-system analysis)
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, *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)
Eunkook Mark Suh, Ph.D. University of Illinois, *Assistant Professor of Social Ecology* (health and well-being in social and ecological contexts)
Lois Takahashi, Ph.D. University of Southern California, *Associate Professor of Social Ecology* (social planning, urban and regional planning, homelessness, community attitudes, planning theory)
Tammy Tengs, Sc.D. Harvard University, *Assistant Professor of Social Ecology* (health policy and management, decision science, policy and planning in public health)
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, *Lecturer in History and Social Ecology*
George Tita, Ph.D. Carnegie-Mellon University, *Assistant Professor of Social Ecology* (criminology, community context of violence, urban youth gangs, homicide studies)
Elaine Vaughan, Ph.D. Stanford University, *Associate Professor of Social Ecology* (environmental assessment, risk perceptions, research methodology, social psychology)
Carol K. Whalen, Ph.D. University of California, Los Angeles, *Professor of Social Ecology and of Psychiatry and Human Behavior* (developmental psychopathology, childhood behavior disorders, child therapies, health psychology)
John M. Whiteley, Ed.D. Harvard University, *Professor of Social Ecology* (moral development, late adolescent to early adult development, social ecology of peace)

OVERVIEW

The School of Social Ecology is a unique interdisciplinary academic unit spanning the environmental, social, behavioral, and health sciences, as well as the relationship between law and society. 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 more than 50 full-time faculty members, 1,500 undergraduate majors, and 150 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. In summary, while ecology is the science of the relationship between organisms and their environments, *social ecology* is the science of the relationships between human populations and their environments.

The faculty is *multidisciplinary*. It includes psychologists with a variety of specialties (e.g., developmental, clinical, social, and environmental); 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 the several disciplines. This focus arises from commitment to the view that societal problems are so complex that their analysis 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 Buildings I and II feature many facilities for experimental research, such as wet laboratories for research and teaching in the environmental health sciences and behavioral assessment laboratories for research in human development, social relations, and legal studies. Wet laboratories are used for studying air and water pollution. 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 School also offers students up-to-date computing facilities and assistance to ensure that their skills prepare them for either advanced (graduate) work or for the changing needs of today's workplace, which increasingly demands skills in computing and information technology.

Degrees

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 (GPA). A minimum overall GPA of 3.5 is required. A general criterion is that students must have completed at least 72 units in residence at a University of California campus. Final decisions concerning the awards of *summa cum laude, magna cum laude,* and *cum laude* are the responsibility of a committee chaired by the Associate Dean for Students. Other important factors are also considered (see page 51).

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.

Continuing-student applicants must meet the following criteria 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 3.0 GPA.

Applied Ecology major: (a) completion of the Subject A requirement; (b) completion of two courses selected from Environmental Analysis and Design E1 or E5, E8, Biological Sciences 94, 96, 97, 98, 99, 100L, with a grade of C or better in both courses; (c) completion of Chemistry 1A and 1B with an average GPA of 2.0 or above; (d) an overall minimum 2.3 GPA.

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 UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. Additional information is available in the Career Center section.

FIELD STUDY

An important aspect of the undergraduate program is its field study requirement for majors. Field study is designed to provide students with an opportunity to examine 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; Irvine 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 54–59.

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.

CAMPUSWIDE HONORS PROGRAM

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; telephone (949) 824-5461; e-mail: honors@uci.edu; World Wide Web: http://www.honors.uci.edu/.

EDUCATION

Students who plan to obtain a teaching credential or a higher degree in the field of education should consult with counselors in the UCI Department of Education early in their college career. Students completing a degree program in the School of Social Ecology may qualify for a waiver of the Single Subject Credential Examination. For additional information about teaching credentials, refer to the Department of Education section.

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.

INTERDISCIPLINARY MINORS

These minors are available to all UCI students. Detailed information may be found in the Interdisciplinary Studies section of the *Catalogue*.

Minor in Conflict Resolution

The minor in Conflict Resolution provides skills in conflict analysis and resolution and a useful understanding of integrative institutions at the local, regional, and international levels.

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.

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.

Undergraduate Major in Social Ecology

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN SOCIAL ECOLOGY

University Requirements: See pages 54–59.

School Requirements: See this page.

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. Only one course from Social Ecology 13, Social Science 9A-B-C, and Social Science 10A-B-C may 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.

110A-B-C Autism Practicum I-II-III (4-4-4). Lecture, three hours; field work, seven hours. Students learn about developmental disorders with a special emphasis on autism. Lecture, readings, and hands-on experience afford the opportunity to learn about a variety of treatment methods. Students work with a young autistic child following training under professional supervision. One year commitment recommended. Pass/Not Pass only.

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.

181 Mentors in Higher Education (4). Seminar, three hours. Discussion of roles and functions of mentors in higher education. Specific mentoring issues include: personal skills, training, the sociocultural role of mentoring in higher education, student affirmative action, history and politics in higher education. Prerequisite: consent of instructor. Formerly Psychology and Social Behavior P181P.

183A Global Peace and Conflict Studies Forum (2). A faculty-student forum featuring lecturers from a variety of institutions with discussion issues related to global peace and conflict studies. Pass/Not Pass only. May be taken for credit four times. Same as Humanities 183A and Social Science 183A.

183B Senior Seminar in Conflict Resolution (4). Designed for seniors (juniors may also enroll) who are pursuing the minor in Conflict Resolution and/or International Studies major. Provides a forum in which students will refine skills and theory in the study of cooperation and conflict, from local to global arenas. Same as Humanities 183B and Social Science 183B. **(VII-B)**

183C Senior Seminar in Conflict Resolution (4). Continuation of Social Ecology 183B. Students write a senior research paper. Prerequisite: Social Ecology 183B and satisfactory completion of the lower-division writing requirement. Same as Humanities 183C and Social Science 183C.

186A-B Senior Seminar on Global Sustainability I, II (2-2) F, W. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations. **A:** Prepare bibliography. **B:** Prepare research proposal. In-progress grading for 186A-B, grade for sequence given upon completion of 186C. Prerequisites: senior standing, Biological Sciences 65, Environmental Analysis and Design E20, and Earth System Science 10. Same as Biological Sciences 191A-B and Earth System Science 190A-B.

186C Writing/Senior Seminar on Global Sustainability III (4) S. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. Prepare/write research paper under the direction of a faculty member. Prerequisites: Social Ecology 186A-B and satisfaction of the lower-division writing requirement. Same as Biological Sciences 191C and Earth System Science 190C.

187 Ideology and Contemporary Social Problems (4). Examines the concept of ideology from the Enlightenment to the present, tracing it from Marx to such contemporary thinkers as R. Williams and D. Bell. The concept and "social criticism" discourse are illustrated through discussions of socialism, communism, fascism, liberalism, conservatism, capitalism.

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 proseminar in which faculty discuss their ongoing research. Students prepare a written proposal for a research project. **H190A:** Letter grade and Pass/Not Pass. **H190B:** Pass/Not Pass only. Prerequisites: acceptance into the Honors Program; junior or senior standing.

H190W Honors Seminar and Thesis (4). Seminar, three hours. Students write up their honors research project (H190A-B) and prepare an oral report which is presented at the honors seminar. Prerequisites: acceptance into the honors program; junior or senior standing.

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; (949) 824-6861
101 Biological Sciences Administration; (949) 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.

Transfer Applicants: See page 41.

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 54–59.

Requirements for the Major

General: Information and Computer Science 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 or 5A-B-C, 5LB-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, 116L, 122L, 129L; Environmental Analysis and Design E142L, E160L, E164L, E173L.

Research or Field Study: Either eight units of Biological Sciences 199, Environmental Analysis and Design E197, 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.

Environmental Health Science: Biological Sciences 122, 143; Environmental Analysis and Design E106, E146, E164, E169A, E169B, E176, E177A, E177B, E178.

Environmental Law, Planning, and Public Policy: Environmental Analysis and Design E101, E102U, E105U, E106, E107U, E108U, E109U, E112, E116, E131U, E141, E143U, E146, E147U, E148U, E149U, E150U, E151U, E153, E155U, E156U, E157U, E158U, E159U, E169A, E169B.

Resource Management-Terrestrial Environments: Biological Sciences 174, 181, 186; Environmental Analysis and Design E105U, E142, E154, E164, E169A, E169B, E178.

Water Pollution Control and Management: Biological Sciences 122, 127, 178, 189; Environmental Analysis and Design E105U, E155U, E160, E164, E168, E169A, E169B, 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 346.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See page 332.

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 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

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)**

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 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 J7 or J101. 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 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.

J111 Latinos and the Law (4). Lecture, three hours; discussion, one hour. Examines a range of theoretical, empirical and policy approaches to legal issues affecting the Latino population, with emphasis on California. Discusses topics concerning the purpose of law, the creation of law, and the enforcement of law.

J112 Science and Law (4). Lecture, three hours. The use of "forensic science" to resolve issues arising in criminal cases and the role of scientific evidence in civil actions. Crime scene analysis, fingerprints, trace evidence comparisons, DNA typing, and technologies related to toxic torts.

J113 Homicide and Suicide (4). Lecture, three hours. Examines similarities and differences among homicide and suicide, two major causes of death.

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 J7.

J116 Gender and Social Control (4). Lecture, three hours. Investigates how gender and social control interface such that each determines and reflects the other. Examines how the social world is organized around sex, sexuality, masculinities, femininities. Processes that regulate and channel social life, desire, conduct, differential allocation of social status.

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 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.

J125 Crime and Public Policy (4). Lecture, three hours. Increase students' understanding of crime, violence, and the criminal justice system; assess students' state of knowledge on current key policy issues, examine/discuss policy-making and the use of empirical information in current U.S. policy debates. Prerequisite: Criminology, Law and Society J7.

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.

J127 Hate Crimes (4). Lecture, three hours. Examines the causes, manifestations, and consequences of hate crimes and the larger social context within which they occur. The politics and dynamics of intergroup violence born of bigotry and manifested as discrimination; social policy designed to control bias-motivated violence.

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.

J129 International Environmental Management (4). Lecture, three hours. Network of intergovernmental organizations (the United Nations, in particular) and international nongovernmental organizations in the field of environmental management. Prerequisite: Criminology, Law and Society J7. Same as Environmental Analysis and Design E127U.

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 J7.

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.

J139 Police and Change (4). Lecture, three hours. Organizational efforts to modify police conduct are addressed by focusing on the history of policing in the United States including training, education, and the contributions of women.

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 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.

J151 Miscarriages of Justice (4). Lecture, three hours. Systematically describes, explains, and analyzes the causes and consequences of the wrongful accusation, prosecution, incarceration, and sometimes even execution, of the innocent in the American criminal justice system.

J152 Interrogation, Confession, and the Law (4). Lecture, three hours. In-depth examination of the social psychology of police interrogation in America, the evolution of American interrogation practices from the nineteenth century to the present, impact of law on police behavior and ideology, causes and consequences of false confessions, possibilities of reform. Same as Psychology and Social Behavior P156S.

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 J7.

J191 Law and Modernity (4). The rise and spread of Enlightenment legal traditions, social contract theory, individual rights, ideologies of "liberty, equality, fraternity"; contradictions of liberal law, its understandings of "primitive" and "civilized"; pervasive myths of property, difference, race, and rights. Reading- and writing-intensive. Same as Anthropology 127A. **(VII-B)**

J196 Research Seminar in Criminology, Law and Society (4). Seminar, three hours. Special topics research seminar. Content varies with interest of instructor. Capstone research opportunity with Criminology, Law and Society faculty members. Prerequisites: upper-division standing and consent of instructor. May be repeated for credit as topics vary.

DEPARTMENT OF ENVIRONMENTAL ANALYSIS AND DESIGN

Jonathon E. Ericson, **Department Chair (Interim)**

The Department of Environmental Analysis and Design is concerned with the interactions between the physical and social environment and human health and behavior. Students begin with basic courses in human ecology, environmental quality, environmental health, epidemiology, environmental health sciences, and environmental 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 changes in the community affect 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. This major is offered jointly with faculty in the Department of Urban and Regional Planning. The faculty also cosponsors the B.S. degree in Applied Ecology with the School of Biological Sciences; see page 334.

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, and public health. 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 346.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See page 332.

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–E180L, selected in any combination from the areas of Socio-Environmental Studies, Design, Planning and 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–E180L.

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 E102U, E108U, E120U, and five additional courses selected from E104U, E105U, E122, E123, E124, E125U, E128U, E129A-B-C, E142L.

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, E176, E177B, Psychology and Social Behavior P45, P134H, Biological Sciences 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, E107U, and seven additional upper-division Environmental Analysis and Design courses selected from E102U, E104U, E105U, E108U, E109U, E115U, E118U, E120U, E124, E125U, E127U, E128U, E131U, E140U, E141U, E143U, E144U, E147U, E148U, E149U, E150U, E151U, E152U, E155U, E156U, E157U, E158U, E159U, E166.

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)**

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, risk reduction, and how the community can respond. Same as Psychology and Social Behavior P45 and Biological Sciences 45. **(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.

E102U 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. Will population growth doom the human race? Examines the influence of Malthus' *First Essay on Population* (1798) on current models of population-environment interactions and the implications of these models for action. Prerequisite: Environmental Analysis and Design E8.

E107U Urban and Regional Planning (4). Lecture, three hours. Important substantive areas, concepts, tools in the field of urban and regional planning. Topics include: forces that have historically guided and are currently guiding U.S. urbanization; land use, economic development, housing and community development, environmental planning; legal, environmental, governmental contexts. Prerequisite: Environmental Analysis and Design E8.

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 P109.

E109U Urban Public Policy (4). Lecture, three hours. Examines why and how urban policies are enacted and carried out in contemporary U.S. cities and regions. Topics include: evolution and organization of city governments and policymaking over the past century; who has the power to direct public

policy and control how cities develop. Prerequisites: Social Ecology 10 and 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. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Psychology and Social Behavior P127H.

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.

E112 California's Population (4). Lecture, three hours. Surveys California's human population (past, present, and future) and its interactions with trends in society, government, the economy, and the environment.

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.

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.

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.

E118U Race, Ethnicity, and Cities (4). Lecture, three hours. Examines racial and ethnic inequality and the influence that urbanization has in affecting race relations. Explores how race/ethnicity, urban space, housing, economic development, public education, and land policy intersect in cities, both historically and today.

E119U Social Ecology of the Internet and World Wide Web (4). Lecture, three hours. Examines the societal impacts of the Internet and World Wide Web on urban design, civic participation, public health, medical care delivery, work roles, and family life. Interrelationships among these phenomena are considered from a social ecological perspective. Prerequisite: Environmental Analysis and Design E8. Same as Psychology and Social Behavior P167S.

DESIGN

E120U 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, E102U, or consent of instructor.

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.

E125U 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; E120U, or consent of instructor.

E127U International Environmental Management (4). Lecture, three hours. Network of intergovernmental organizations (the United Nations, in particular) and international nongovernmental organizations in the field of environmental management. Prerequisite: Criminology, Law and Society J7. Same as Criminology, Law and Society J129. Formerly Environmental Analysis and Design E127.

E128U 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 E125U.

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. **(VII-A)**

PLANNING AND PUBLIC POLICY

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.

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.

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.

E145U Environmental Politics and Policy (4). Lecture, three hours. Provides a multifaceted foundation for the development of environmental problem-solving and policy-making skills. Examines "nature" from a range of historical and cultural perspectives. Links socio-ecological stress theories to a range of landscapes and contemporary debates. Current air, water, and land policies.

E146 Dynamics of Human Populations (4). Lecture, three hours. Survey of measurement and theory in social demography, with applications to social and economic issues at local, regional, and global levels.

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).

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.

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.

E156U Public Health Cost-Effectiveness Analysis (4). Students learn how to calculate the cost-effectiveness of life-and-death public health interventions by measuring health-related quality of life, survival, and cost, and how to use cost-effectiveness information to make wise public health investment decisions in the face of limited resources.

E157U Public Policy Analysis (4). Examines different approaches to the analysis of public policy with differing notions of what constitutes good policy, the role of government, and how citizens participate in policy-making. Suggests a policy-design perspective which builds upon other frameworks but concentrates on goals, implementation structures, tools, and rationales. Prerequisites: Environmental Analysis and Design E8 and E109U. Same as Political Science 121E.

E158U Economic Analysis of Government Behavior II (4) W. The study of government using the tools of economics. The effects of various taxation and expenditure policies, such as social security, are examined. Prerequisites: Economics 100A-B or consent of instructor. Same as Economics 141B and Political Science 127B.

E159U Urban Economic Development Policy (4). Theoretical and practical perspectives on local economic development policy. Integrates economic, planning, political perspectives. Overview of economic role of cities and metropolitan areas. Specific development issues include link between taxes, regulation, job growth; redevelopment planning; evaluating economic development policy.

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 or a general course in biology.

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 or a general course in the Biological Sciences Core curriculum; and completion of or concurrent enrollment in E160.

E163 Issues in Potable Water Reuse (4). Lecture, three hours. Provides an in-depth study of the treatment and subsequent reuse of wastewater for drinking. Analyzes existing regulations for both drinking water and reuse situations, microbial and chemical contaminants, health concerns and risk assessment. Prerequisite: Environmental Analysis and Design E8.

E164 Toxins in the Environment (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 Toxins in the Environment Laboratory (4). Lecture, three hours, laboratory, one hour. Involves planning, sampling, gathering, and analyzing data. Direct first-hand experience in carrying out a scientific research project from inception through final technical report. Corequisite: E164. Prerequisite: Environmental Analysis and Design E8.

E165 Introduction to Environmental Health Science (4). Lecture, three hours. Focuses on processes of exposure to environmental toxins/agents and their impact to human health and the environment. Media transport, exposure assessment, susceptibility, behavior, and health effect of several toxins are discussed.

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.

E167U Foundations of Community Health (4). Lecture, three hours. A social ecological framework for understanding community health is presented. Measures of individual and community health are compared, and the influence of personal and environmental factors on individual, group, and population health is examined. Community health promotion strategies also are discussed. Prerequisite: Environmental Analysis and Design E8. Same as Psychology and Social Behavior P126H.

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.

E173 Health and Global Environmental Change (4). Lecture, three hours. Overview of scientific underpinnings of global environmental change and human health consequences. Provides students with an understanding of the fundamental dependency of human health on global environmental integrity. Encourages disciplinary cross-fertilization through interaction of students in environmental, health, and policy sciences. Prerequisite: at least one upper-division course in environmental science, public health, environmental policy, and/or environmental management, or consent of instructor.

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.

E179 Terrestrial Ecosystems (4) W. A mechanistic perspective of the structure and functioning of terrestrial ecosystems. Includes the mechanisms that control plant growth, hydrology and nutrient cycling, and the roles terrestrial ecosystems play in local and global biogeochemistry. Prerequisite: Biology 96 or consent of instructor. Same as Biological Sciences 118 and Earth System Science 120.

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.

E185 Environmental Geology (4). Introduction to geologic principles and applications to environmental problems. Topics include: tectonic processes, earth materials, soils, river processes, groundwater, the coastal environment, slope failures, seismic hazards, mineral resources, and land-use evaluation based on geologic conditions. Examples from case studies. Prerequisite: Environmental Analysis and Design E8.

E185L Environmental Geology: Field and Laboratory (4). Provides weekly lecture, laboratory 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. Prerequisite or corequisite: Environmental Analysis and Design E185; consent of instructor, senior standing. Formerly E142L.

E196A-B Applied Ecology Research (4-4). Basic introduction to research and laboratory research techniques: experimental design, laboratory skills, biostatistics, library research. Students undertake a two-quarter project focusing on environmental health of humans or of flora and fauna associated with environments that are impacted by human activities. Corequisite: first year of Biological Sciences Core. Prerequisites: general chemistry; Biological Sciences 100L or Environmental Analysis and Design E103, or consent of instructor. In-progress grading. Formerly E197A-B.

DEPARTMENT OF PSYCHOLOGY AND SOCIAL BEHAVIOR

Karen S. Rook, **Department Chair**

The Department of Psychology and Social Behavior is concerned with human behavior in social contexts. A major objective is to investigate how different social environments (e.g., the family, school, workplace) affect health and 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 abnormal, developmental, clinical, health, social, and environmental psychology, and the psychological study of social problems. Courses cover such topics as psychosocial development in children, adolescents, adults, and the elderly; childhood behavior disorders and developmental psychopathology; sex differences; attitude formation and change; clinical health psychology; cognition and emotion; stress and coping; cross-cultural influences on behavior; and counseling and therapy. Opportunities also are available to work with faculty on research in these and other areas. Obtaining research experience as an undergraduate also provides a valuable background for entry into many graduate programs. The 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 at UCI. Students interested in developmental, clinical, health, social, or environmental psychology, or in psychology and the law, are advised to consult the course listings here in the Department of Psychology and Social Behavior section. These courses offer students a solid foundation in general psychology. Students interested in perception, learning, memory, and cognitive sciences are advised to consult the course listings in the Department of Cognitive Sciences and the School of Biological Sciences sections of the *Catalogue*.

Information on the graduate program begins on page 346.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See page 332.

Departmental Requirements

Ten courses (40 units) as specified below:

A. Three upper-division Psychology and Social Behavior core courses (12 units), one from each of these areas: Developmental Psychology (P101, P102), Health and Pre-Clinical Psychology (P103, P105, P107), and Social and Environmental Psychology (P108, P109).

B. Three upper-division specialty courses, one from each of these areas: Developmental Psychology (P115D– P124D), Health and Pre-Clinical Psychology (P126H–P143H and P144C–P155C), and Social and Environmental Psychology (P156S–P167S and P168P–P193P).

C. Four additional courses selected from the specialty areas in requirement B.

D. P100 (Special Topics in Social Behavior) may be used as a specialty course by petition.

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, risk reduction, and how the community can respond. Same as Environmental Analysis and Design E45U and Biological Sciences 45. **(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 or equivalent, and 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 or equivalent. 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 or equivalent. 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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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 or equivalent; Social Ecology 10. Psychology and Social Behavior P105 and Psychology 120A may not both be taken for credit.

P107 Clinical Child Psychology (4). Lecture, three hours. Examines research and theory concerning childhood psychopathology and behavior disorders. Diagnosis and assessment, early identification of high-risk children, fear and phobias, antisocial behavior, childhood psychoses, autism, depression, hyperactivity and attention deficit disorders, ethical and policy implications of identifying children who are different. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P109 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. Formerly Psychology and Social Behavior P183P.

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 or equivalent.

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. Prerequisites: Psychology and Social Behavior P9 or equivalent; 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. Prerequisites: Psychology and Social Behavior P9 or equivalent; 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: Psychology and Social Behavior P9 or equivalent.

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. Prerequisite: Psychology and Social Behavior P9 or equivalent. 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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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 or equivalent.

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 equivalent.

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 or equivalent; Social Ecology 10.

HEALTH AND PRE-CLINICAL PSYCHOLOGY

P125H The Hardiness Approach to Stress Management (4). Lecture, three hours. Hardiness is a new development within psychology involving a combination of motivations and skills that extensive research has shown enhances performance, conduct, morale, stamina, and health. Combines study of hardiness research with strategies for improvement of personal hardiness through a series of exercises.

P126H Foundations of Community Health (4). Lecture, three hours. A social ecological framework for understanding community health is presented. Measures of individual and community health are compared, and the influence of personal and environmental factors on individual, group, and population health is examined. Community health promotion strategies also are discussed. Prerequisite: Environmental Analysis and Design E8. Same as Environmental Analysis and Design E167U.

P127H 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. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Environmental Analysis and Design E110. Formerly Psychology and Social Behavior P104.

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 or equivalent, 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 or equivalent; 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 or equivalent 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 or equivalent.

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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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 P9 or equivalent, P127H, 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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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 or equivalent.

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.

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: Psychology and Social Behavior P9 or equivalent. Psychology and Social Behavior P144C and Psychology 120P may not both be taken for credit.

P145C Forensic Psychology (4). Lecture, three hours. Presents theoretical and empirical basis for a psychological perspective of criminal behavior, particularly violent behavior. Examines violence, sexual offending, and mental disorder related to crime with regard to clinical assessment, treatment, and rehabilitation; mental health services within forensic institutions. Prerequisites: Psychology and Social Behavior P9 or equivalent and consent of instructor.

P146C Clinical Psychology (4). Lecture, three hours. Overview of theories, assessment techniques, research methodologies and intervention approaches in clinical psychology. Psychodynamic, behavioral, humanistic, and cognitive perspectives are examined along with ethical and professional issues. Prerequisites: Psychology and Social Behavior P9 or equivalent; Social Ecology 10; Psychology and Social Behavior P105. Formerly Psychology and Social Behavior P106.

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 or equivalent; 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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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 or equivalent; 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 invincible children; children of mentally ill parents; families at risk; childhood antecedents of adult disorders. Prerequisite: Psychology and Social Behavior P9 or equivalent; 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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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: Psychology and Social Behavior P9 or equivalent.

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. Prerequisites: Psychology and Social Behavior P9 or equivalent, P154C, and consent of instructor.

SOCIAL AND ENVIRONMENTAL PSYCHOLOGY

P156S Interrogation, Confession, and the Law (4). Lecture, three hours. In-depth examination of the social psychology of police interrogation in America, the evolution of American interrogation practices from the nineteenth century to the present, impact of law on police behavior and ideology, causes and consequences of false confessions, possibilities of reform. Same as Criminology, Law and Society J152.

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 equivalent.

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. Prerequisites: Psychology and Social Behavior P9 or equivalent; 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: Psychology and Social Behavior P9 or equivalent, Social Ecology 10 or equivalent, and Social Ecology 13 or equivalent.

P161S Psychology of Subjective Well-Being (4). Lecture, three hours. Introduces recent empirical developments in subjective well-being, an emerging field of psychology devoted to the study of happiness and life satisfaction. The antecedents and consequences of psychological well-being are discussed in relation to various demographic, personality, cross-cultural, developmental, and cognitive factors. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P162S Error and Bias in Social Judgment (4). Lecture, three hours. Examines how people encode, reason about, and remember social information and explores how biases and shortcomings in social perception, judgment, and memory are central to understanding both effective social functioning and many forms of maladaptive behavior and social conflict. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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 J7 or J101. Same as Criminology, Law and Society J105.

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 or equivalent.

P167S Social Ecology of the Internet and World Wide Web (4). Lecture, three hours. Examines the societal impacts of the Internet and World Wide Web on urban design, civic participation, public health, medical care delivery, work roles, and family life. Interrelationships among these phenomena are considered from a social ecological perspective. Prerequisite: Environmental Analysis and Design E8. Same as Environmental Analysis and Design E119U.

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.

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 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: Psychology and Social Behavior P9 or equivalent.

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 or equivalent.

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.

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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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. Prerequisite: Psychology and Social Behavior P9 or equivalent.

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: Psychology and Social Behavior P9 or equivalent and 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.

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.

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 E108. Same as Environmental Analysis and Design E124.

P196 Research Seminar in Psychology and Social Behavior (4). Seminar, three hours. Special topics research seminar. Content varies with interest of instructor. Capstone research opportunity with Psychology and Social Behavior faculty members. Prerequisites: upper-division standing and consent of instructor. May be repeated for credit as topics vary. Formerly P197.

DEPARTMENT OF URBAN AND REGIONAL PLANNING

World Wide Web: http://www.seweb.uci.edu/depart/urp_home.html
Scott A. Bollens, **Department Chair**

Established in 1992, the Department of Urban and Regional Planning utilizes an interdisciplinary approach to urban community problem solving. The Department faculty devote their scholarly and teaching efforts to theory-driven and empirically oriented urban research and their interests include community development and social policy, economics and public policy, environmental policy, land-use policy, transportation policy, community health policy, and urban design and behavior. Collaborative academic and research ties are maintained with other units on campus including the School of Social Sciences, the Graduate School of Management, and the Institute of Transportation Studies. The Department's teaching, research, and graduate training utilize UCI's close proximity to both urban centers and planned suburban communities, as well as the University's location within the dynamic Southern California and Pacific Rim regions.

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), which is fully accredited by the National Planning Accreditation Board; 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.

The common mission linking the Department's undergraduate, master's, and doctorate-level instruction and faculty research efforts is to bring applied research to the cause of bettering neighborhoods, communities, and regions. Southern California has grown dramatically over the past three decades and will soon become the nation's largest urban corridor. The challenges to maintain the quality of life, provide employment opportunities, and reduce the deep socioeconomic disparities of this binational, metropolitan, and multiethnic region are enormous. No other region in the United States has been faced with the kinds of problems and future possibilities that now confront Southern California and its increasingly diverse communities.

If the challenges presented by contemporary urbanization are enormous, its promise is equally vast. Extremely diverse, multiethnic communities face the necessity of solving their problems in ways that are acceptable to their populations. Older central city areas that are vital to the region face issues of social and economic sustainability. The need to create employment opportunities, through the application of new technologies in industries and services, will be one of the most challenging policy questions facing urban regions. At the same time, urban growth and transportation will have to meet the increasingly stringent environmental regulation that can safeguard the population's health and the quality of the natural environment. The urban design and landscape of most communities stand to be reshaped as never before, as the building stock ages and the need to redevelop increases.

Ph.D. in Urban and Regional Planning: See page 350.

Master of Urban and Regional Planning: See page 347.

Urban and Regional Planning Minor Requirements

Nine courses (36 units): Environmental Analysis and Design E8, E107U, and seven additional upper-division Environmental Analysis and Design courses selected from E102U, E104U, E105U, E108U, E109U, E115U, E118U, E120U, E124, E125U, E127U,

E128U, E131U, E140U, E141U, E143U, E144U, E147U, E148U, E149U, E150U, E151U, E152U, E155U, E156U, E157U, E158U, E159U, E166.

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.A. in Social Ecology with a concentration in Demographic and Social Analysis, the M.S. in Environmental Health Science and Policy, or the Master of Urban and Regional Planning. In addition, many students in the Ph.D. programs in Human Development, Health Psychology, and Criminology, Law and Society obtain an M.A. in Social Ecology on the way to their Ph.D.

Social Ecology faculty members apply diverse methods of scientific inquiry to 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, end-of-life medical decision-making, violence and aggression, legal sanctions and deterrence, white-collar and organized crime, police work, 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 and water policy, air quality, biotechnology, epidemiology, the use of scientific information in public policy formation and litigation, community approaches to HIV/AIDS prevention, the health impacts of work environments, and processes involved in environmental regulation.

ADMISSION

Students should submit their complete application file including the application form, transcripts, three letters of recommendation, and Graduate Record Examination (GRE) scores by January 9 if they are applying to the Department of Psychology and Social Behavior, February 1 if they are applying to the Department of Urban and Regional Planning, or by January 15 if they are applying to any other department. Additional information is available from the Social Ecology Graduate Counselors; telephone (949) 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

At the graduate level, the emphasis in the School of Social Ecology is on the Ph.D. program, with the exception of the M.A. in Social Ecology with a concentration in Demographic and Social Analysis, the M.S. in Environmental Health Science and Policy, and the Master of Urban and Regional Planning. In very rare circumstances a student may be admitted directly to the M.A. degree program in Social Ecology. Students interested in this option only must call the Social Ecology Graduate Office at (949) 824-5917 before submitting their applications.

Master's degree students are assigned a faculty advisor with whom the student discusses an individual program of education. The program leading to the M.A. degree in Social Ecology requires a thesis and satisfactory completion of seven approved courses (28 units), including the Seminar in Social Ecology (Social Ecology 200), Research Methods (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.

M.A. IN SOCIAL ECOLOGY WITH A CONCENTRATION IN DEMOGRAPHIC AND SOCIAL ANALYSIS

The M.A. in Social Ecology with a concentration in Demographic and Social Analysis offers training in the practical research skills needed to address analytical problems confronting society, business, government, and the nonprofit sector. The concentration emphasizes the Pacific Rim and issues defining Southern California's population, such as immigration, changing household and family structure, racial and economic inequalities, and the impact of local and regional population growth. Informed by the interdisciplinary field of demography, the program draws on faculty and courses in the Schools of Social Ecology and Social Sciences.

The concentration in Demographic and Social Analysis offers the option of additional professional certification for doctoral students already admitted to the School of Social Ecology. Admission, core course, and thesis requirements are identical to those for the general M.A. in Social Ecology. In addition, students must complete 12 units of designated electives in population issues or research methods. Up to two upper-division undergraduate courses may be approved to fulfill the elective requirement. Students interested in this concentration should call the Graduate Counseling Office at (949) 824-5924 for more information.

M.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 trains researchers and professionals in contemporary methods of planning and policy analysis. The program is fully accredited by the National Planning Accreditation Board and has 14 core full-time faculty. 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.

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. Required courses are History of Urban Planning (U202), Theoretical Foundations of Planning (U203), Microeconomics Analysis for Urban Planning (U206), Quantitative Analysis for Planners (U214), Development Control Law and Policy or Environmental Law and Policy (U207 or U252), Analytical Methods for Planning (U215), Regional Analysis or Urban Sociology (U223 or U274), and two quarters of Urban Planning Studio (U280A-B). Master's degree specializations include community development and social policy, economics and public policy, land use policy, environmental policy and planning, transportation policy, community health planning, and urban design and behavior. In addition, a written comprehensive examination or a professional report is required during the last quarter of residency in the program. Successful completion of the examination or professional report is required before the degree can be awarded. A thesis is not required.

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.

Practical experience in community planning in the form of part-time planning internships is strongly encouraged and supported as part of a student's education. Additionally, a two-quarter Planning Studio in the second year of study links classroom learning to work on a community-based and client-based planning project. Students have access to drafting stations and computers for use in planning studies, geographic information systems (ARC-VIEW) courses, and research. Students also have full access to computer laboratories in the two Social Ecology buildings which are equipped with word processing, statistical, spreadsheet, and database programs; electronic mail, and World Wide Web browsers.

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.

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 encouraged 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.

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. This program is ideally suited for independent students who wish to develop a unique interdepartmental program of study in consultation with faculty from several departments.

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 during their third year of study. This is accomplished through successful completion of either a written comprehensive examination or the submission of a major paper or series of papers that intensively examine specific substantive problems and bodies of research. Preferably, the perspective taken should be multidisciplinary, but a single disciplinary approach is acceptable if it is more congruent with the student's educational goals and is acceptable to the student's committee. Each student's plans for completing the breadth requirement are developed in collaboration with a committee of three Social Ecology faculty members. Students are encouraged to meet with this committee as early as possible during their graduate career and are required to do so 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. The fourth and possibly fifth years of study are devoted to developing and defending a dissertation proposal and conducting dissertation research.

Ph.D. IN SOCIAL ECOLOGY WITH A CONCENTRATION IN ENVIRONMENTAL ANALYSIS AND DESIGN

The doctoral concentration in Environmental Analysis and Design prepares students to conduct research on questions of vital importance to professionals in environmental analysis and evaluation, in environmental design and behavior, and on related questions on the formulation of environmental and health policy. These questions reflect an overarching concern with the effects of the natural and built environments on the health and social well-being of humans.

This doctoral concentration particularly focuses on insights from a social ecological perspective. One of the concentration's strengths is its research sequence which spans the disciplines within the Departments of Environmental Analysis and Design and Urban and Regional Planning. Students typically choose the majority of their graduate classes from those two departments.

Students conduct analyses of sociocultural, behavioral, and environmental factors that influence health and well-being, including public and private sector policy. They are also trained to evaluate the effectiveness of interventions designed to enhance the health of individuals and the community as a whole. The curriculum and diversity of faculty within the concentration afford unique opportunities for multidisciplinary research and training.

Potential employment sources for graduates include academic and research institutions; 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 focal areas within this concentration: Environmental Design and Behavior, Environmental Policy, Earthquake Geology and Environmental Hazard, Social Epidemiology, Environmental Health, and Health Promotion. The elective courses cover topics such as environmental and urban design, environmental health risks, urban planning, behavioral epidemiology, demography, urban and regional analysis, technological hazards and change, international environmental policy, environmental psychology, and geographical information systems. 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 crime, institutional responses to illegal behavior, and the interaction of law and society are the foci of the doctoral program in Criminology, Law and Society. Students examine issues related to the etiology of crime, the process of changing criminal behavior, social regulation, the civil justice system, and the social and cultural context of law.

Students gain familiarity with a number of subjects including sentencing; crime rates; modes of modifying criminal behavior; police behavior; white collar and organized crime; hate crimes; behavior of courts, juries, and regulatory agencies; environmental law; immigration law; Native American justice issues; and the interaction among law, culture, and identity. In general, students are introduced to the leading classical and contemporary issues in criminology, law and society and to ways of understanding them through interdisciplinary research. The program aims to develop theoretical sophistication and to prepare the graduate student for faculty positions at major universities; and for research and administrative work in institutions in the legal system, the criminal justice system, and related organizations.

In addition to the five core courses required of most Ph.D. students, noted earlier, students take at least four required courses, Crime and Public Policy (C230), Theories of Crime, (C235), Law and Society, (C239), Legal Reasoning, (C237), and three elective courses in Criminology, Law and Society. These elective courses should be chosen in consultation with the student's faculty advisor. Students become involved in research activities from the earliest stages of their training and complete an independent, supervised research project during the second year of graduate study. Methods of research may include questionnaires and surveys, systematic field observation, computer simulation, legal analyses, and archival research. Students complete a written comprehensive examination during year three, which requires them to demonstrate mastery of major theoretical, substantive, and methodological issues in criminology, law and society. The 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 nonprofit 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). After the second year, students must submit a written doctoral research proposal. Advancement to doctoral candidacy is achieved upon successful defense of the proposal during an oral, comprehensive qualifying examination. Degree completion should occur in four or five years. In addition, doctoral students must serve 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 health behaviors during childhood and adolescence; worksite health promotion; economic stress and behavior disorders; and

responses to environmental, technological, and health 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) or Coping with Stressful Life Events (P268), and the three-quarter Practicum in Health Psychology (P209A-B-C). Also, students take one health psychology elective, Perceptions of Environmental and Health Risks (E206), Interpersonal Processes and Health (P262), Health and Social Relations (Social Science 252O); and three additional courses, e.g., Late Adulthood and Aging (P225), Violence and Its Social Impact (P237), Environmental Psychology (E288), 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 specialities; 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 family, school, and cultural influences on academic achievement and psychosocial development; transition to parenthood; development in early childhood and the effects of variations in the social environment; the effects of divorce and custody arrangements; effects of parental employment on children's social development; children's social development; relations between cognitive and emotional development; children's health-risk perceptions; adaptation to stress over the life span; and the social relationships and 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 (P236); 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 researchers. Specializations include community development and social policy, land use policy, economics and public policy, environmental policy and planning, transportation policy, community health planning, and urban design and behavior. UCI's 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. Students complete eight required courses and at least four elective courses. 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. The normative time for completion of the Ph.D. in Urban and Regional Planning is five years. Doctoral students who wish to earn the existing Master's degree in Urban and Regional Planning can do so by fulfilling all of the course and eligibility requirements for that degree. Three required courses for the Master's degree are also part of the Ph.D. program.

Graduates with a doctorate degree in Urban and Regional Planning are employed in a wide array of activities, ranging from university teaching and research, to administrative and research-oriented positions in governmental agencies, international agencies, nonprofit organizations (including research institutions), and private

consulting practices. There are a broad range of specialties in which graduates can apply their skills. Land-use policy research, environmental management analysis, social policy research and implementation, economic development program analysis, transportation analysis, and research on the physical design of communities and urban spaces are only some of the various occupational functions.

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.

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.

254 Research Design and Data Analysis (4). Examines the practical implications of linkages between research methods and data analysis. Considers the underlying assumptions of common statistical procedures (e.g., regression and ANOVA analysis) and how certain methodological choices can render their usage questionable.

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.

260 Seminar in Applied Statistics (4). Introduces methods for data analyses and statistical computing using SPSS for Windows. Emphasis is on the applied use of statistics to test specific hypotheses and drawing appropriate conclusions based on available statistical evidence.

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.

263 Integrating Concepts in Social Ecology (2 or 4). Examines epistemology, theoretical foundations, underlying assumptions, and applications of social ecological perspectives. Integrates interdisciplinary concepts drawn from the interests of students, faculty, and invited guests. Prerequisite: graduate standing or consent of instructor.

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.

266B Applied Logistic Regression (4). Develops statistical models to be used where the dependent variable is dichotomous. Applications to be considered include cohort and ease-control analyses. Prerequisites: Social Ecology 264A-B or consent of instructor.

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.

266D Analysis of Survival Date (4). Provides an introduction to survival analysis methods for the analysis of change in discrete dependent variables. Focuses on data collection strategies for obtaining longitudinal data and continuous-time hazards models. Communicates the variety and power of multivariate hazard models.

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.

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 Descriptive Multivariate Statistics I (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), DMDP, and SPSS. Students must enroll in the laboratory section which meets on Wednesdays. Satisfactory/Unsatisfactory grading only. Prerequisite: Social Sciences 100A-B-C or equivalent. Same as Information and Computer Science 238A, Social Science 201A, and Management 290X.

290B Applied Multivariate Statistics (4). Lecture, four hours; laboratory, two hours. Presentation of the principle methods of multivariate statistics including criteria for appropriate use and the interpretation of resulting measurements. Computer exercises are used to demonstrate concepts. Prerequisites: Social Ecology 290A. Same as Information and Computer Science 238B, Management 290Y, and Social Science 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 Science 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.

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.

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.

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.

C243 Juvenile Justice and Public Policy (4). Explores the phenomenon of juvenile delinquency and society's responses to it. Reviews major theoretical perspectives regarding the onset, persistence, and desistance of juvenile delinquency and examines their relationship to juvenile justice policies and practices.

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.

C246 Understanding Community-Based Corrections (4). Seminar familiarizes students with concepts, practices, and evidence regarding modern community-based criminal sanctions. Discussions include probation and parole; house arrest and electronic monitoring; boot camps; day fines; community service; and the costs and benefits of these programs. Prerequisite: graduate standing or consent of instructor.

C249 Law and Morality (4). Examines major theoretical, empirical, and policy-oriented research related to the design, implementation, and analysis of government intervention, through the criminal sanction, in the spheres of vice and morality. Prerequisite: graduate standing or consent of instructor.

C251 Qualitative Criminological Analysis (4). Examines issues and strategies involved in the collection and analysis of qualitative data. Application of qualitative research methods with respect to criminology, law and society. Prerequisite: graduate standing or consent of instructor.

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.

Graduate Courses in Environmental Analysis and Design

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.

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.

E222 Populations (4). Introduces the interrelationships between population and social organization. Considers measurement and explanation of historical and contemporary trends in birth rates, death rates, migration, and marriage and divorce. Case material is drawn primarily from the U.S. and other industrialized nations. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 253F and Sociology 262A.

E224 Environmental Health Science II: 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 I: 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.

E226 Environmental Health Sciences III: Biostatistics and Epidemiology (4). Presents descriptive and experimental approaches to the recognition of the causal association of disease for the occupational setting, as these approaches apply to populations using different study designs and models from the literature, and with frequent assistance of laboratory methods. Prerequisite: graduate standing and consent of instructor.

E236 Molecular Environmental Microbiology Laboratory (4). Focuses on field and laboratory techniques used in analyzing microbial populations in natural and polluted environments.

E237 Ecotoxicology (4). Focuses on ecological receptors for toxic chemicals in the environment. Includes analytical methods for pollutant source, transport, transformation, and organism exposure; molecular bloodmarkers of organism and ecosystem response to pollutants.

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.

E249 Environmental Epidemiology (4). Concentrates on epidemiological approaches to the assessment of community environmental hazards; issues involved in environmental exposure estimation; interdisciplinary approaches to environmental epidemiology, including the use of biomarkers of exposure and susceptibility; epidemiological studies within the context of risk assessment. Prerequisite: Environmental Analysis and Design E226.

E250 Cancer Epidemiology (4). Concentrates on understanding how epidemiology plays a role in the search for cancer etiology, prevention, control, and treatment; gives an overview of cancer research with an appreciation of the multidisciplinary nature of the field. Prerequisite: Environmental Analysis and Design E226.

E251 Genetic Epidemiology (4). Concentrates on the role of genetic factors in the etiology of disease in human populations with an objective of disease control and prevention, and the role of interactions of genetic factors and environmental exposures in the occurrence of disease. Prerequisite: Environmental Analysis and Design E226.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

U203 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: graduate standing and consent of instructor. Formerly U282.

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.

U210 Infrastructure Planning (4). Examines planning and policy issues surrounding public services and facilities. Topics include the distribution of the benefits and costs of various public services and fiscal, traffic, and environmental impacts of land development. Prerequisite: graduate standing.

U211 Urban Design and Behavior (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 Transportation Planning (4). Introduces current topics in transportation planning. Includes an analysis of the economic role of transportation in urban areas, land-use impacts of transportation projects, traffic congestion, air quality, alternatives to the automobile, and other transportation topics. Prerequisite: graduate standing.

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.

U216 Technology and Development (4). Explores the relationship among technology, economic development, and social change from a broad, multidisciplinary perspective. Relates the impacts of technological innovation to the rise of specific activities, such as information technology, biotechnology, and electronics. 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.

U218A-B Advanced Research Methods 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. Formerly U208A-B.

U219 Advanced Planning Theory (4). Provides an overview of prevailing theoretical debates to provide advanced students with a foundation for critical analysis of planning and related literatures. Topics include rationality and science, markets and planning, libertarianism, theories of the state, ethics, gender, and race. Prerequisite: Urban and Regional Planning U203 or equivalent, or consent of instructor.

U221 Public Policy (4). Explores different approaches to public policy analysis, the diverse conceptions of the goals and objectives that should be served by policy, and the appropriate role of the policy analyst. Policy consequences are traced to indirect and subtle incentives and disincentives. Prerequisite: graduate standing or consent of instructor. Same as Political Science 221A.

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.

U224 Environmental Politics and Policy (4). Reviews and critiques literature on discussion topics including: the nature and effectiveness of the environmental movement and environmental policies; the role of science and technology; the use of economic incentives in policy; decentralization of decision making; and creating arenas for public involvement. Prerequisite: graduate standing or consent of instructor. Same as Political Science 224A.

U225 Local Economic Development (4). Analyzes the economic development process. Attention is given to economic theories of local development and practical implications of those theories. Topics include local economic development and poverty, tax incentives, infrastructure credits, effects of government competition for economic activity. Prerequisite: graduate standing.

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.

U230 New Leadership Roles (4). Explores the impact and interaction of the various stakeholders of private, public, and nonprofit organizations and the effects these stakeholders have on the responsibilities and actions of the organizations' leaders. Focuses primarily on the relationships between leaders and various constituencies. Prerequisite: graduate standing or consent of instructor.

U232 Diversity and Urban Environments (4). Explores diversity and power in the use and design of the physical environment. Examines how people differ in their relationships to environments on the basis of gender, race/ethnicity, age, socioeconomic status, physical abilities, sexuality, religion, and culture.

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 Community Design (4). Provides an overview of the current condition of urban design in the United States. Topics include the academic environment, the retail environment, multi- and single-family residential environments, the office environment, and new urban design tools. Prerequisite: graduate standing or consent of instructor.

U237 Introduction to Geographic Information Systems (4). Application of Geographic Information Systems (GIS) to the field of urban and regional planning. Emphasizes current issues that occur in actual implementation settings. Lecture/discussion followed by laboratory demonstrating the area of GIS discussed. Offers "hands-on" student usage of GIS software.

U238 Advanced Geographic Information Systems (4). Extends study of geographic information systems to more advanced issues, including data sources, data conversion, relational database integration, software customization, and spatial and three-dimensional analysis. Prerequisite: Urban and Regional Planning U237.

U240 International Environmental Policy (4). Explores causes and effects of environmental problems and the effectiveness of different adaptation or restoration strategies and how they are closely linked to ways in which political, economic, demographic, and cultural systems interact among themselves and ecological systems.

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.

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 Land-Use Policy (4). Examination of the role of public policy in guiding growth and development in urban and suburban environments. Description of a wide-ranging set of growth policies, the rationales underlying their use, controversies and legal constraints, and evaluation of their effectiveness. Prerequisite: graduate standing.

U246 Housing (4). Examines issues of housing planning and policy and how they intersect with issues involving the larger neighborhood and community context. Investigates the roles of private developers and local, state, and federal governments in the provision of housing. 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.

U253 Site Planning (4). Examines site specific, neighborhood, and community site planning from the site designer and local government perspectives. By reviewing actual discretionary case applications and case studies, students learn how regulatory, environmental, and government constraints influence site planning. Prerequisite: graduate standing or consent of instructor.

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.

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.

U272 Survey Research Methods (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.

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? Prerequisites: graduate standing, consent of instructor. Same as Social Science 254J and Sociology 252A.

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.

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.

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.

U292A-B Professional Report (2-2). Workshop designed to assist M.U.R.P. students in conducting their professional reports. Students select topics, design projects, conduct professional investigation, and write up reports. In-progress grading.

U297 Ph.D. Seminar (2). Serves as a bridge between course work in urban planning and the undertaking of independent research. Helps guide second-year Ph.D. students who are studying urban planning and policy in development of their predissertation research project. Prerequisite: graduate standing.

U298 Directed Studies in Urban Planning (2 to 4). Prerequisites: graduate standing and consent of instructor. May be repeated for credit.

U299 Independent Study in Urban Planning (2 to 8). Prerequisites: graduate standing and consent of instructor. May be repeated for credit.

SCHOOL OF SOCIAL SCIENCES

William R. Schonfeld, **Dean**

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OVERVIEW

Undergraduate and graduate education in the School of Social Sciences at UCI represents a commitment to modern social science. The classic subject areas of anthropology, economics, geography, linguistics, political science, psychology, and sociology are included in the School's educational programs, but these programs go well beyond the traditional disciplines and can be characterized by the following emphases.

First, the faculty recognizes the value of systematic empirical observation and quantitative analysis in the study of human behavior. Developments in computer science and in mathematics oriented toward the problems of the social sciences, and the refinement of techniques for the observational, experimental, and statistical study of human behavior, have contributed major new elements to social science. Students in the School of Social Sciences will become familiar with the mathematical, computational, and statistical tools underlying modern social science.

Second, many of the most interesting questions in the study of human behavior cannot be fixed within the traditional disciplinary boundaries. Some of the new and evolving areas which cross orthodox boundaries are political sociology, public policy, cognitive anthropology, and psycholinguistics. Therefore many courses and course modules are built around these interdisciplinary social science phenomena rather than representing social science disciplines.

Third, the School emphasizes the design of hypotheses and of systems of interrelated ideas as an essential part of scientific pursuit. Consequently, the educational programs place substantial emphasis on understanding social science phenomena through the development of theories that can be used to guide empirical studies.

Educational opportunities for students in the School of Social Sciences extend well beyond attendance at courses. Students may develop independent study proposals in cooperation with interested faculty members or may investigate social science applications via off-campus internships. They are invited to participate in the quarterly evaluation of courses and instructors, to propose new courses and other modifications in existing programs, to nominate candidates for visiting faculty appointments, and to serve on School committees. The School provides a variety of opportunities for faculty-student interaction, and students will find the faculty, administration, and academic counseling staff of the School highly accessible and responsive.

Special Facilities

The School of Social Sciences maintains several special facilities for research and education.

The **Social Sciences Research Laboratory,** used for both faculty and student research, occupies the entire fourth floor of the Social Sciences Laboratory Building. The facility contains 40 experiment and control rooms and several specialized facilities including a virtual reality facility and infant cognition laboratory.

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. Undergraduates receive course credit for assisting staff teachers, for developing educational materials, and for observing and analyzing child behavior at the school.

Three **Computer Laboratories** provide access to networked IBM-compatible systems, where students can work on assignments using full-featured word-processing, database, graphics, and statistical packages. In addition, these computers provide students with access to e-mail, Internet services, and the World Wide Web. The new Social Science Plaza facility contains state-of-the-art, high-tech lecture halls and is fully Internet accessible.

The **Social Sciences Academic Resource Center (SSARC)** provides personal assistance to all Social Sciences students on finding research opportunities, off-campus internships, and graduate and professional programs. The Center maintains a library of graduate school catalogues, Statement of Purpose tips and handouts, and GRE, GMAT, LSAT, and CBEST registration booklets and test preparation information. SSARC is fully staffed and provides Internet access to students, disseminates information on scholarships, and conducts workshops on graduate school and other related post-baccalaureate opportunities. A Recommendation Coordination Service for obtaining letters of recommendation is available to School majors. The service provides assistance for students applying to graduate and professional programs.

The **Center for the Study of Democracy** (CSD) continues the work of the UCI Focused Research Program on Democratization that was founded in 1991 and sponsors research and training on the process of democratic transition and the expansion of the democratic process in already established democracies. CSD includes a multidisciplinary faculty from four UC campuses.

CSD's activities are focused on three areas. First, faculty administer a graduate training program on empirical democratic theory. The National Science Foundation selected UCI in 1995 as a national center for the training of doctoral students in democratization issues; the five-year NSF grant provides funding for graduate fellowships and other training activities.

Second, the Democracy research program aims at improving the democratic process in the United States and other established democracies as we enter the next century. The program focuses on reforms to increase the ability of citizens to express their preferences and have these preferences represented within the democratic process.

Third, CSD supports research on the development of sustainable democracies in Eastern Europe, East Asia, and other new democracies. The New Democracies Initiative contributes to the promotion of democracy in these formerly authoritarian systems. For more information visit the Center for the Study of Democracy's Web site at http://www.democ.uci.edu/democ.

Visiting Distinguished Professorships

The School sponsors a program of Visiting Distinguished Professorships that exposes students to seminal thinkers in the social sciences. The professorships normally are of a quarter's duration. Participants have included Martin Bronfenbrenner, Professor of Economics (Duke University) and Fellow of the American Academy of Arts and Sciences; Philip Converse, Robert C. Angell Professor of Political Sciences and Sociology (University of Michigan), President of the American Political Science Association, and member of the National Academy of Sciences and the American Academy of Arts and Sciences; Beatrice Whiting, Professor of Anthropology and Education Emeritus, Graduate School of Education (Harvard University), and member of the American Academy of Arts and Sciences; John Whiting, Professor of Social Anthropology (Harvard University) and member of the American Academy of Arts and Sciences; James Coleman, Professor of Sociology (University of Chicago) and member of the National Academy of Sciences and the American Academy of Arts and Sciences; and Robin M. Williams, Department of Sociology (Cornell University) and member of the American Academy of Arts and Sciences and the National Academy of Sciences.

Degrees

Anthropology	B.A.
Economics	B.A., M.A., Ph.D.
Geography [1]	B.A.
International Studies	B.A.
Linguistics	B.A.
Philosophy [2]	Ph.D.
Political Science	B.A., Ph.D.
Psychology	B.A., Ph.D.
Social Science	B.A., M.A., Ph.D.
Sociology	B.A.
Transportation Science [3]	M.S., Ph.D.

Within the Ph.D. in Social Science are four optional concentrations: *Anthropology,* supervised by Department of Anthropology faculty; *Linguistics,* supervised by Department of Linguistics faculty; *Mathematical Behavioral Sciences,* supervised by an interdisciplinary group of faculty; and *Sociology and Social Relations,* supervised by Department of Sociology faculty.

Within the M.A. in Social Science, students may apply directly to the concentration in Demographic and Social Analysis; for those enrolled in a Ph.D. program at another institution, the M.A. concentration in Mathematical Behavioral Sciences is available.

[1] The major of Geography is not available at this time; however, courses in Geography are offered under Social Science.

[2] Jointly administered by the Department of Philosophy in the School of Humanities.

[3] Supervised by the Interdepartmental Group in Transportation Science. See the Interdisciplinary Studies section of the *Catalogue*.

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 51).

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, 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 10A, 10B, 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.

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 54–59.

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 Science 10A-B-C, Social Science 100A-B-C, or Sociology 10A-B-C). (NOTE: School of Social Sciences majors may not take Social Science 9A-B-C to fulfill the mathematics requirement.) Computer education is essential for a complete social science education. This requirement can be satisfied by passing Information and Computer Science 10A, 10B, or 21, or Social Science 3A. Departments may have preferences for specific courses. See your major department for acceptable courses. This course requirement should be taken during the student's first year.

B. An understanding of the fundamental concepts, analytical tools, and methods of social science. This requirement is met by taking two four-unit introductory courses in the School of Social Sciences bearing a one-digit course number. 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 four-unit upper-division courses in the School of Social Sciences, where at least three of these courses comprise core courses or 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 four-unit social science courses from any level.

Students are reminded that the Pass/Not Pass option is not applicable to course requirements A through D above or to any additional requirements listed for specific major programs. However, Information and Computer Science 10A, 10B, 21, and Social Science 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.

Maximum Overlap Between Major and Minor Requirements: Students completing both a major and a minor within the School of Social Sciences may count courses taken to fulfill the School's mathematics and computer science requirement toward satisfaction of both the major and the minor. No other course overlap is allowed.

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.

SERVICE LEARNING, COMMUNITY SERVICE, AND INTERNSHIPS

Service learning is a meaningful activity that integrates service within the curriculum. It is an opportunity for students to make positive contributions to underserved and marginalized communities through academic courses, field studies, and internships. Service learning provides out-of-class experiences to reinforce understanding of academic theory while addressing serious community concerns. When combined with a structured curriculum having research components, students can explore the role of the social scientist and help seek solutions to problems affecting society. The School of Social Sciences' philosophy is to practice research, service, and good citizenship.

The School actively supports service learning through its philosophy of enhancing the learning process by motivating, inspiring, and teaching students how to recognize and accept their civic responsibilities. The goal is to educate students about social issues and provide them with the necessary tools to solve the difficult problems society faces. Under the guidance and supervision of faculty and staff, students are offered the opportunity to experience personal, professional, social, and intellectual growth through the following School of Social Sciences programs: public- and private-sector internships, community service, field studies, and the specialization in Public and Community Service within the major in Social Science.

UNDERGRADUATE PROGRAMS IN K–12 EDUCATION

Undergraduate students who wish to pursue a career in the field of K–12 education are well-served in the School of Social Sciences and the Department of Education. The following interrelated programs provide opportunities for students to gain knowledge and experience in this important area.

Minor in Educational Studies

The minor in Educational Studies allows students to explore a broad range of issues in the field of education and provides a strong foundation for K-12 teaching. Both introductory and advanced courses are included, giving students a solid preparation for later teacher credential programs and many related occupations. NOTE: A Statement of Intent is required of all students wishing to enroll in this minor. See the Department of Education section of the *Catalogue* for more information.

Multiple Subject and Single Subject (Social Science) Preparation

Course work in the Social Science major (Social Studies specialization) provides excellent preparation for students wishing to obtain a multiple subject teaching credential. Students who take additional course work can satisfy the subject matter requirement for a single subject teaching credential in social science. See page 380 for specific requirements. NOTE: Official enrollment in the single subject program is required to satisfy this requirement. The Counseling Office in 347 Social Science Tower can provide details.

Department of Education Programs

The Department of Education provides many other opportunities for prospective educators, including: a mentoring program which provides students with valuable experience while they work with credentialed teachers; *UC Links*, a program in which undergraduates tutor K–8 students in after-school settings; and advising services provided by counselors who assist students in planning future careers in education. Further information about these programs is available from the Department of Education counselors at 2001 Berkeley Place.

Students interested in obtaining a teaching credential should see the Department of Education section of the *Catalogue* for information.

SPECIAL PROGRAMS

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.

Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; telephone (949) 824-5461; e-mail: honors@uci.edu; World Wide Web: http://www.honors.uci.edu/.

Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. Additional information is available in the Center for International Education section.

Interdisciplinary Minors

A variety of interdisciplinary minors are available to all UCI students. See the Interdisciplinary Studies section of the *Catalogue* for complete information.

The minor in Asian Studies creates opportunities for students to explore Asian topics in a variety of fields, to develop advanced language skills, and to acquire broader perspectives.

The minor in Chicano/Latino Studies is designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, film, drama, music) accomplishments in the Chicano/ Latino communities.

The minor in Conflict Resolution provides skills in conflict analysis and resolution and a useful understanding of integrative institutions at the local, regional, and international levels.

The minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

The minor in the History and Philosophy of Science explores how science is actually done and how it has influenced history, and is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences.

The minor in Native American Studies focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis.

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.

Information about the following interdisciplinary minors is available in the School of Humanities section.

The minor in African-American Studies offers undergraduate students an opportunity to study those societies and cultures established by the people of the African diaspora and to investigate the African-American experience from a variety of disciplinary perspectives and theoretical approaches.

The minor in Asian American Studies examines the historical and contemporary experiences of Asians after their arrival in the United States and seeks to provide an awareness of the history, culture (e.g., literary and creative art accomplishments), psychology, and social organization of Asian American communities.

The minor in Latin American Studies is designed to develop in students an awareness, knowledge, and appreciation of Latin American issues in the areas of language, history, culture, literary studies, sociology, anthropology, political science, health, folk medicine, and creative (art, dance, film, drama, music) accomplishments.

The minor in 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

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

Because all Social Sciences degrees involve an educational program that is interdisciplinary and that prepares students to understand quantitative methods of data analysis, graduates of the School are well-positioned for research and analysis careers at all levels of government and in private firms. Their solid grounding in contemporary social science methods and their familiarity with a broad spectrum of social scientific thinking gives them an excellent foundation for the pursuit of further training in graduate and professional programs.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. Additional information is available in the Career Center section.

Graduate Program

The School of Social Sciences offers graduate training in the following areas: Anthropology, 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; Logic and Philosophy of Science, leading to the Ph.D. in Philosophy; Mathematical Behavioral Sciences, leading to the Ph.D. in Social Science; Politics and Society, leading to the Ph.D. in Political Science; and Sociology 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, an emphasis in Social Networks is offered within the Mathematical Behavioral Sciences concentration, and a concentration in Political Psychology is offered within the program in Political Science. When an applicant's interests lie outside of or across these areas, the Associate Dean of Graduate Studies, School of Social Sciences, may, on rare occasions, appoint a three-member faculty committee to guide an independent course of study leading to the Ph.D. degree in Social Science.

The M.A. degree in Economics or Social Science may be conferred upon students in Ph.D. programs after completion of the necessary requirements.

Additionally, a program leading to the M.A. degree in Social Science with a concentration in Demographic and Social Analysis is supervised by faculty from the Schools of Social Sciences and Social Ecology. Students may apply directly to this M.A. program.

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*.

In cooperation with the UCI Department of Education, students enrolled in a School of Social Sciences graduate program may choose to pursue a teaching credential while working toward their degree. After completion of requirements for an M.A. degree, students may apply for admission into the credential program administered by the Department of Education. As required by law, the applicant must pass the California Basic Educational Skills Test (CBEST), obtain a Certification of Clearance, and successfully complete the appropriate subject area examination or an approved subject-matter program. A detailed description of the program may be obtained from the Social Sciences Graduate Office or the Department of Education.

ADMISSION

Potential graduate students should apply by January 15 to receive fullest consideration for financial aid. Applicants should indicate the title of the degree sought (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 five to seven years.

Students admitted to the M.A. concentration in Demographic and Social Analysis should be able to earn the M.A. within one to two years.

Because the intellectual training offered by the School requires full-time study and constant contact with the faculty, the School does not accept part-time students.

DEPARTMENT OF ANTHROPOLOGY

4229 Social Science Plaza B; (949) 824-7602
James G. Ferguson, **Department Chair**

Anthropology is the comparative study of past and present human societies and cultures. The Department of Anthropology emphasizes contemporary theory, field research, and a variety of methods for analyzing anthropological data. The Department has a strong interdisciplinary bent, with research and teaching interests in economic anthropology, political economy, social history and social change, culture and health, identity and ethnicity, gender and feminist studies, cognitive anthropology, social networks, modernity and development, religion, and the arts and expressive culture. The Department also has a strong emphasis on the study of contemporary issues and modern problems, such as international flows of goods, peoples, images, and ideas; the relationship between global processes and local practices; immigration, citizenship, and refugees; population politics; violence and political conflict; ethnicity and nationalism; gender and family; medicine; law; development and economic transformation; urban studies; and environmental issues. While the program gives students a breadth of knowledge in traditional anthropology, the faculty do not merely pursue research on the traditional subjects of anthropological study, but bring anthropological analyses to bear on pressing contemporary social issues. Geographic regions of expertise include Latin America, southern Africa, east Africa, Micronesia and Oceania, the Caribbean, China, South Asia, and diasporic and transnational communities in the United States and abroad.

Undergraduate Program

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See page 360.

Departmental Requirements for the Major

School requirements must be met and must include 12 courses (48 units) as specified below:

A. Anthropology 2A.

B. Anthropology 2B, 2C, or 2D.

C. Anthropology 30A or 30B.

D. Three topical courses (12 units) from Anthropology 120–159, 170–179).

E. Two courses (eight units) on a geographical area, from Anthropology 160–169.

F. Four additional elective courses (16 units) from Anthropology 30A, 30B, 40–179, 180A.

Students are strongly encouraged to take Anthropology 180A after they have had at least three courses beyond Anthropology 2A and 2B, 2C, or 2D. Students are also strongly encouraged to take both Anthropology 30A and 30B.

The faculty encourages Anthropology majors or minors to study abroad and experience a different culture while making progress toward degree objectives. The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of many worldwide opportunities. For example, EAP offers excellent opportunities to study anthropology at many universities abroad 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 enthnographic 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 seven anthropology courses (28 units) as specified below:

A. Anthropology 2A.

B. Anthropology 2B, 2C, or 2D.

C. Anthropology 30A or 30B.

D. Two topical courses (eight units) from Anthropology 120–159, 170–179).

E. Two courses (eight units) on a geographical area, from Anthropology 160–169.

Graduate Program

Participating Faculty

Duran Bell: Economics, economic anthropology

Victoria Bernal: Economic development, peasants, gender, political economy; Africa, muslim societies

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

William M. Maurer: Anthropology of law, globalization, transnationalism, citizenship and nationalism, finance capital, identity, Caribbean

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 Science 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. Students must demonstrate competence to read one foreign language, in accordance with the requirements of the Ph.D. degree in Social Science.

At the end of the first year, students must pass a formal evaluation which is made by the Department of the basis of (1) the first-year course work and (2) examinations to be taken as part of the Proseminar. Students should advance to candidacy by the end of the third year; the advancement to candidacy examination is based on a research proposal, a review of relevant literature, and an annotated bibliography. The fourth (and, in many cases, some or all of the fifth) year is normally devoted to extended anthropological fieldwork. The sixth year (in some cases, also part of the fifth) is devoted to writing the dissertation, in close consultation with the advisor.

Feminist Studies Emphasis

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

Social Networks Track

A track in Social Networks within Anthropology may be completed by taking any three Social Networks seminars. This includes the core Network seminars Social Science 241A (Interaction Models), 241B (Network Theories of Social Structure), and 241C (Analysis of Relational Data), as well as other courses listed in the Social Networks section of the *Catalogue*. Those seminars taught by members of the Anthropology Department count as Anthropology electives, and other seminars as outside electives.

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 Science 9A-B-C or 10A-B-C, or Sociology 10A-B-C. **(V)**

20A People, Cultures, and Environmental Sustainability (4). An anthropological consideration of global environmental sustainability from the perspective of human cultures and communities. Causes and consequences of population growth, natural resource management, environmental law, environmental ethics. Case studies emphasize tropical rain forests, arid lands of Africa and North America. Same as Environmental Analysis and Design E20.

30A Global Issues in Anthropological Perspective (4). Explores anthropological perspectives on issues of importance in an increasingly global society. Topics vary from year to year; may include emphases on ethnic conflict; identity; immigration and citizenship; religion and religious diversity; medical anthropology; legal anthropology; development and economic change; gender.

30B Ethnography and Anthropological Methods (4). Explores the role of ethnography in anthropological and other social science research. Provides theoretical and reflective readings on ethnography, as well as practical exercises in ethnographic method, to explore ethnography's traditional place as anthropology's main methodological contribution to the social sciences.

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.

50A Primate Societies (4). Surveys the lifeways of non-human primates. Topics include general characteristics of primates, their evolution, geographical distribution, ecology, and social relationships. Special emphasis placed on the adaptive aspects of primate societies and their relevance for understanding humans and the nature of human societies. Same as Psychology 73P.

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. **(VII-B)**

121E Women, Race, and Social Movements in Latin America (4). Analyzes the emergence and transformation of social movements in Latin America from the 1980s to the present. Focuses on two groups of protagonists: women (who organized various types of movements), and Black Latin Americans (whose organization has been limited). **(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). Concrete anthropological and sociological studies from across the world, including the United States, are compared to give perspectives on social status, power, economic differences, race, ethnicity, and gender. Prerequisite: one course in Anthropology, Economics, Political Science, or Sociology. Same as Sociology 165A. **(VII-B)**

121J Urban Anthropology (4). Cultural roles of urban centers and processes or urbanization in comparative perspective, focusing on nonwestern, nonindustrial societies of past and present; relationship between modern urban centers and Third World peoples. Migration, urban poverty, adaption, social and political integration of rural folk in urban settings in Africa, Asia, Latin America. **(VII-B)**

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 economic relationships of the form that characterize intergroup and intragroup economic processes of many tribal societies. Includes analyses of gift exchange and resource allocation within the household. **125Q:** Devoted entirely to supervised research by class members. Prerequisites: Economics 20A-B-C; Economics 152A or Anthropology 125A recommended. Same as Economics 152P-Q. **(VII-B)**

125S The Anthropology of Money (4). Anthropological approaches to monetary systems; impact of money on subsistence economies; cultural history of money in the west; and modern transformations of money. Also considers recent developments in the cultural history of money, "securitization," credit alternative currencies, and digital cash.

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. **(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. Same as Asian American Studies 151F.

125Z Muslim Identities in North America (4). Explores multiple identities of Muslims in North America, including indigenous Muslims (e.g., African-American Muslims and Sufis) and immigrants of many national origins. Explores religious, political, cultural, ethnic, class differences among American Muslims, turning to Islamic institutions near UCI to conduct small research projects. Same as Asian American Studies 142. **(VII-A)**

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. Corequisites or prerequisites: Economics 10A-B and 30 or equivalents recommended. Prerequisites: Economics 20A-B-C. Same as Economics 148D. **(VII-B)**

127A Law and Modernity (4). The rise and spread of Enlightenment legal traditions, social contract theory, individual rights, ideologies of "liberty, equality, fraternity"; contradictions of liberal law, its understandings of "primitive" and "civilized"; pervasive myths of property, difference, race, and rights. Reading- and writing-intensive. Same as Criminology, Law and Society J191. **(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.

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.

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?

136B History of Anthropological Theory (4). A review of competing approaches in anthropological theory from the nineteenth century to the present, covering social evolutionism, functionalism, structuralism, and cultural relativism, as well as more recent intellectual movements and issues such as feminism, cultural studies, poststructuralism, and postmodernism.

136D Conflict Management in Cross-Cultural Perspective (4). Examines theories of conflict management. Analyzes how conflict is mitigated in diverse cultures: at the interpersonal level, between groups, and on the international scale. Students discuss readings, hear from conflict management practitioners, and simulate negotiations. Same as Political Science 154G. **(VII-B)**

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.

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. **(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.

137A Reading Images Culturally (4). Students are provided with the analytical tools necessary to undertake research on visual representations. Images, as cultural productions, are steeped in the values, ideologies, and taken-for-granted beliefs of the culture which produced them. Of concern are representations of race, identity, gender, and the "Other."

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)**

138S Music of Greater Mexico (4). A wide range of musics exist in Mexico, and in the Mexican traditions within the United States. From the indigenous traditions of Mexico and the ancient Aztec and Mayan civilizations through the Colonial and Revolutionary periods, the variety of Mexican music is explored.

138T Africa and Afro-American Music (4). Africa's range of musical languages had a profound influence on the musics of the Americas. Covers sub-Saharan Africa and Afro-American musics of Latin America and the United States. Explores the survival of cultural characteristics and diffusion of musical ideas. **(VII-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.

149 Special Topics in Archaeology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

AREA STUDIES

161T Field Research: Asian Immigrants and Refugees in Orange County (4). Instruction in field work methodology via research projects involving the local communities of immigrants and refugees from Asia. Open only to School of Social Sciences and Asian American Studies majors. Same as Asian American Studies 197. **(VII-A)**

162A Peoples and Cultures of Latin America (4). Surveys the prehistory of Latin America and its indigenous cultures, emphasizing the impact of colonial rule, capitalism, and twentieth-century transformations. Emphasis on communities from several countries. In some years, emphasis on comparisons between the Latin American and Caribbean experiences. **(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. Prerequisite: satisfaction of the lower-division writing requirement. **(VII-A)**

163A Peoples of the Pacific (4). The cultural history and recent developments among the Pacific peoples of Polynesia, Micronesia, Melanesia, New Guinea, and Australia. **(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)**

164N Islam and Society (4). Examines transformations in contemporary Muslim communities around the world. Explores relationships among religion, culture, and economy. Ethnography, fiction, autobiography, videos, and slides introduce students to relationships between Muslims and the West; diversity among Muslim societies; daily life in different Muslim communities.

164P Peoples and Cultures of Post-Soviet Eurasia (4). Examines the cultures and political conflict of the more than 130 indigenous ethnic groups in the European and Asian territories of the former U.S.S.R. Emphasis is on the theoretical issues of ethnicity, nationalism, and conflict management. Same as Political Science 154F. **(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

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 Science 10A-B-C, 100A-B-C, or consent of instructor. Same as Social Science 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)**

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 Science 182A and Sociology 114A.

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 Sociology 221A-B and Social Science 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 Science 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 Science 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. Prerequisites: graduate standing; consent of instructor. Same as Social Science 201G, 241C, and 256A, and Sociology 225A.

222B 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. Same as Social Science 241B.

222C 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. Same as Social Science 241A.

223A Research Design (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. Prerequisites: graduate standing; consent of instructor. Same as Social Science 255A and Sociology 220A.

225A Grant and Proposal Writing (4). Focuses on production, critique, and revision of student research proposals. A practical seminar designed to improve student proposals, help students through the application processes, and increase students' chances of obtaining support for their research. Prerequisite: graduate standing or consent of instructor. Same as Social Science 255C.

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 Science 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 Science 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 Science 252O.

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 Science 254K.

235A Transnational Migration (4). The immigrant experience will be examined in order to explore how specific theoretical issues are examined empirically. These issues include ethnic enclave formation, gendered differences in migration and settlement, class differences, the migration of indigenous groups, identity formation, and issues of representation. Same as Social Science 254A.

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 Science 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 Science 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 Science 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 Science 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 Science 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 Science 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 Science 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 Science 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 Science 254I.

246B Law, Colonialism, and Nationalism (4). Origins and spread of law in colonial and nationalist contexts: law's role in constituting and policing difference. Recent theoretical approaches; property in things and people; human and indigenous rights; "customary" law; legal foundations of nationalism; resistance to/through law; globalization. Prerequisite: graduate standing. Same as Social Science 254M.

246C Nations, States, and Gender (4). Explores the ways in which nations, nationalism, states, and citizenship are gendered relations and processes. Questions include: How do women construct themselves as political subjects, and how are constructions of citizenship and discourses of rights gendered? Same as Social Science 253Q.

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 Science 252G.

248A Approaches to Globalization (4). Historical and contemporary approaches to the world economy, emphasizing anthropological questions of culture, power, identity, inequality. Examines "neo-imperialism," "late capitalism," accumulation, global markets, urban space, the state, business and policy globalization discourse, "local" responses to and instantiations of the "global." Prerequisite: graduate standing or consent of instructor. Same as Social Science 254L.

248B Citizenship, Democracy, and Violence (4). Building on the discussion of works which formulate broader hypotheses about the relationship of culture and the control of violence, explores the dynamics of violence under democratic regimes in case studies either in Europe or in the Americas. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254N.

250A The Cultural Politics of Visual Representation (4). Develops a theoretical framework for analyzing and reading visual images. Images, as cultural productions, are steeped in the values, ideologies, and taken-for-granted beliefs of the culture which produced them and a political economy that is class, race, and gender inflected.

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

3221 Social Science Plaza B; (949) 824-7569
Barbara A. Dosher, **Department Chair**

The Department of Cognitive Sciences is committed to the investigation of the abstract, complex structures that underlie human cognition: language, thought, memory, learning, sensorimotor integration and perception. The main areas of research strength within the Department are visual and auditory perception, experimental psychology, cognitive psychology, 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 2001 should be sure to file their application before November 30, 2000.

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 or they must have taken Psychology 9A-B-C and four core courses with a GPA of at least 3.0 in those seven courses. 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 have 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 54–59.

School Requirements: See page 360.

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, or, by petition, one or two quarters of Social Science H1E, H1F, or H1G, when topic is not psychology.

C. A one-quarter course and laboratory in experimental psychology or research methods selected from Psychology 112A and 112LA, 112F and 112LF, 112M and 112LM, or 112P and 112LP. (Psychology 112F and 112LF were previously numbered 115A and 115LA.)

NOTE: These courses have as prerequisites Psychology 9A-B-C and one year of mathematics/statistics (see course listings). These prerequisites are strictly enforced. Psychology 112A, 112LA and 112F, 112LF are each the first quarter of a multi-quarter sequence that satisfies the upper-division writing requirement and allows students to plan and conduct research projects. Students taking these courses should plan to continue in them through at least the second quarter. Students who intend to fulfill the upper-division writing requirement in some other way should consider taking Psychology 112M, 112LM, or 112P, 112LP to fulfill requirement C.

D. Four upper-division Psychology core courses are required (16 units). These courses are designated with the ending number "0" and include the following: Psychology 120A, 120D, 120H, 120P, 130A, 140C, 140L, 140M, and 140N.

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, 11E, 46A, 56L, 76M 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.

(4) No more than two of the courses (each of four or more units) may be numbered 190–199.

NOTE: Psychology majors are strongly encouraged to take Biological Sciences 1A-B and 35 in satisfaction of the 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 Psychology 112A-B-C sequence. Most psychology graduate programs require statistics (which, at UCI, may be satisfied by taking Social Science 10A-B-C, Psychology 10A-B-C, or Social Science 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 thorough grounding in research methods and culminates with the opportunity for basic research in some area of psychology under faculty supervision. The program has a limited number of openings and seeks to attract outstanding students who plan to undertake postgraduate education in some field of the psychological sciences. Admission to the program is based on a formal application that is normally submitted in the spring quarter of the sophomore year. Applicants should have an overall grade point average of at least 3.2 and a grade point average of at least 3.5 in psychology courses, although this requirement may be waived in unusual cases.

During the junior year, students who participate in the program are expected to enroll in Honors Experimental Psychology (H111A-B-C), and in the fall quarter of the Honors Seminar in Psychology (H101A). As seniors, following successful completion of these junior-year requirements, Psychology honors students are enrolled

Sample Programs — Psychology Majors

GENERAL	GRADUATE SCHOOL TRACK	HONORS
Freshman		
Psych. 9A-B-C	Psych. 9A-B-C	Psych. 9A-B-C
2 Intro. Soc. Sci.	Humanities Core	Humanities Core
ICS 10A or 10B or 21	Math. 2A-B-C	Math. 2A-B-C
6 Breadth		
Sophomore		
3 quarters Statistics[1]	3 quarters Statistics[1]	3 quarters Statistics[1]
3 Core[2]	3 Core[2]	3 Core[2]
6 Breadth/Electives	2 Intro. Soc. Sci.	2 Intro. Soc. Sci.
	ICS 21	ICS 21
	3 Breadth	3 Breadth
		Apply to Honors in spring
Junior		
1 Core[2]	1 Core[2]	Psych. H111A-B-C
3 Module/upper-division Psych.	3 Module/upper-division Psych.	Psych. H101A
4 Breadth/Electives	4 Breadth/Electives	1 Core[2]
Select one of the following:	*Select one of the following:*	2 upper-division Psych. courses
Psych. 112A-B-C and 1 upper-div. Psych.	Psych. 112A-B-C and 1 upper-div. Psych.	
Psych. 112F-G and 2 upper-div. Psych.	Psych. 112F-G and 2 upper-div. Psych.	
Psych. 112M or 112P and 3 upper-div. Psych.		
Senior		
9 Electives	9 Electives	8 Electives
Select one of the following:	2 Psych. 199	Psych. H101B-C
2 Psych. 199 and Psych. 190	1 Psych. 190	2 Psych. 199
3 upper-division Psych.		

Sample Program — Transfer Psychology Majors

Junior	Senior
Psych. 9A-B-C	1 Core[2]
3 quarters Statistics[1]	3 Module/upper-div. Psych. courses
ICS 10A or 10B or 21	1 Elective
2 Intro. Soc. Sci.	*Select one of the following:*
3 Core[2]	Psych. 112A-B-C and 3 upper-div. Psych. courses
	Psych. 112F-G and 4 upper-div. Psych. courses
	Psych. 112M and 5 upper-div. Psych. courses

[1] Either Psychology 10A-B-C, Social Science 10A-B-C, or Social Science 100A-B-C, with Psychology 10 and Social Science 100 recommended for those planning to attend graduate school in Psychology.

[2] Psychology core course, an upper-division course with the ending number "0."

in the Honors Seminar in Psychology (H101B-C) in the fall and spring quarters. Participants in the honors program are expected to complete course work beyond the 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 or eight psychology courses (28 or 32 units) as specified below:

A. Psychology 7A (for the 28-unit minor) or 9A-B-C (for the 32-unit minor).

B. Three upper-division Psychology courses chosen from the following core courses in Psychology: 120A, 120D, 120H, 120P, 130A, 140C, 140L, 140M, 140N.

C. For students who take Psychology 7A, three additional psychology courses (four or more units each) no more than one of which is a lower-division course. For students who take Psychology 9A-B-C, two additional upper-division Psychology courses (four or more units each). Psychology 190–199 cannot be used to fulfill this requirement.

D. In addition, the School mathematics and computer science requirement (School requirement A) must be satisfied.

Graduate Program

Participating Faculty

William Batchelder: Mathematical models of learning and memory, mathematical psychology, and measurement
Bruce Berg: Psychoacoustics of complex sounds, auditory attention
Myron Braunstein: Visual perception and computer applications
Michael Butler: How people learn and how they can learn better
Charles F. Chubb: Visual perception, motion processing, psychophysics, neural network models
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 Dosher: Memory, information processing, perception
Michael D'Zmura: Visual perception, color vision, attention and virtual reality
Jean-Claude Falmagne: Mathematical behavioral sciences
Gregory Hickok: Functional neuroanatomy of language, cognitive neuroscience
Donald Hoffman: Human and machine vision, recovery of three-dimensional structure from image motion, visual recognition of objects by their shape
Gavin Huntley-Fenner: Relationship between language and thought, with an emphasis on cognitive development
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
R. Duncan Luce: Mathematical behavioral science; measurement theory, utility theory, response times
Virginia Mann: Speech perception and its development, the development of reading ability, developmental dyslexia
Louis Narens: Measurement, logic, and metacognition
Kourosh Saberi: Spatial hearing, sensory genetics
George Sperling: Vision, perception, information processing
Ramesh Srinivasan: Dynamics of brain activity in cognition and perception
W.C. Watt: Cognitive semiotics
Charles E. Wright: Motor control, skill learning, timing
John I. Yellott, Jr.: Mathematical psychology and visual perception

The Department of Cognitive Sciences offers an integrated course of study leading to a Ph.D. in Psychology, with a specialization in cognitive science, to prepare students for research and teaching careers in academia, industry, and government. The emphasis is on modern techniques of experimentation and theory construction. Special attention is given to providing hands-on research experience and equipping students with sophisticated mathematical and computing skills. The Department has 24 faculty; two are members of the National Academy of Sciences, and many serve as editors or editorial board members of leading professional journals, and as members of NSF and NIH study panels. Many Cognitive Sciences faculty are also members of UCI's Institute of Mathematical Behavioral Sciences, and the Department is generally regarded as one of the world's leading centers for mathematically oriented research in cognitive psychology. One sign of this is the fact that six of its members serve on the Board of Editors of the *Journal of Mathematical Psychology.*

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. (That background is required for completing the program's research methods courses.) Advanced courses in some of the following fields are considered highly desirable: computer science, mathematics and the physical sciences, biology, logic, and linguistics. Standard requirements for admission include Graduate Record Examination (GRE) scores for tests taken within the past five years, official transcripts of all college course work, and three letters of recommendation. Applicants from non-English speaking countries must also take the Test of English as a Foreign Language (TOEFL) and achieve a score of 550 or higher; and if applying for a teaching assistantship, the Test of Spoken English (TSE) must also be taken and a score of 50 or more achieved.

To receive full consideration for fellowship and assistantship awards, applications must be received by January 15. Late applications may be considered until July 1 on a space-available basis. Since the program starts in the fall quarter, students are not normally admitted in the winter or spring, though exceptions may be made. Application materials may be obtained by contacting the Social Sciences Graduate Office.

REQUIREMENTS FOR THE DOCTORAL DEGREE IN PSYCHOLOGY

Each student is expected to take two three-course graduate sequences in the first year. One is a three-quarter research methods sequence covering the areas of probability, statistics, and experimental design (Psychology 203A-B-C). 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. Students are expected to enroll in the Cognitive Sciences Research Seminar (Psychology 201A-B-C) during all quarters in residence prior to passage of the advancement-to-candidacy examination.

In addition, students must take at least six more courses prior to advancement to candidacy. These courses are normally taken from at least three of the following six modules: Foundations (Psychology 200–209); Human Cognition (Psychology 210–229); Methodologies and Models (Psychology 230–239); Virtual Reality (Psychology 240–249); 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 professional journal.

Every student is assigned a faculty advisor, and the advisor is responsible for assisting in the planning and other facets of the project. Students are required to write a paper based on their research project and to present a talk to the Cognitive Sciences Research Seminar by the end of the spring quarter of their second full year in the graduate program. (Another forum for the second-year talk may be substituted with the written approval of the Graduate Director.)

At the end of each academic year the faculty of the Department meet to discuss and provide feedback on the progress of each student in the program.

Formal permission to begin a Ph.D. dissertation research project (a step known as "advancement to candidacy") is contingent on passage of an examination, normally taken at the end of the third year or the beginning of the fourth year in the program. The advancement-to-candidacy examination is based on a written dissertation proposal prepared by the student, and consists of an oral examination and, at the faculty's option, a written examination as well.

Each student is required either (1) to establish proficiency in reading social science technical material in one appropriate foreign language or (2) to demonstrate proficiency in computer programming considerably beyond that of the standard computer skills requirement. Because of the constantly changing nature of computer languages and other software, the conditions for fulfilling this computer expertise requirement will be left to the judgment of the Department's subcommittee on computers.

Prior to submission of the final version of the dissertation the student is 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. Prerequisite or corequisite for 10A: Psychology 9A. 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 Science 9A-B-C or 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. **(III)**

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 140M. **(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. **(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)**

73P Primate Societies (4). Surveys the lifeways of non-human primates. Topics include general characteristics of primates, their evolution, geographical distribution, ecology, and social relationships. Special emphasis placed on the adaptive aspects of primate societies and their relevance for understanding humans and the nature of human societies. Same as Anthropology 50A.

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

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 Science 100A-B-C, or Mathematics 2A-B-C. Open only to students in the Honors Program in Psychology or by consent of instructor. Psychology 111A and 112A may not both be taken for credit.

H111LA Honors Experimental Psychology Laboratory (2) F. Corequisite: Psychology H111A.

H111B Honors Advanced Experimental Psychology (4) W. Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research. Corequisite: Psychology H111LB. Prerequisite: Psychology H111A or Psychology 112A. Open only to students in the Honors Program in Psychology or by consent of instructor.

H111LB Honors Advanced Experimental Psychology Laboratory (2) W. Corequisite: Psychology H111B.

H111C Honors Research in Experimental Psychology (4) S. Each student conducts a research project in experimental psychology. The projects are discussed in a seminar format. Written reports on each project are submitted at the end of the quarter. Prerequisite: Psychology H111B or 112B. Open only to students in the Honors Program in Psychology or by consent of instructor.

NOTE: Students who wish simply to fulfill the laboratory/research-methods requirement in one quarter should take Psychology 112M or 112P. Students also wishing an opportunity to conduct their own research and fulfill the upper-division writing requirement should take either Psychology 112A-B-C or 112F-G.

112A Experimental Psychology (4) F. Emphasis on design of experiments and analysis of results. Experiments are conducted in laboratory sections. Corequisite: Psychology 112LA. Prerequisites: Psychology 9A-B-C; Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences, Social Science 100A-B-C, Mathematics 2A-B-C, or 2A-B and 7. Only one course from Psychology 111A, 112A, and 112F-G may be taken for credit.

112LA Experimental Psychology Laboratory (2) F. Corequisite: Psychology 112A.

112B Advanced Experimental Psychology (4) W. Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research. Corequisite: Psychology 112LB. Prerequisite: Psychology 112A, 112LA. Only one course from Psychology 112B and 112F-G may be taken for credit.

112LB Advanced Experimental Psychology Laboratory (2) W. Corequisite: Psychology 112B.

112C Research in Experimental Psychology (4) S. Each student conducts a research project in experimental psychology. The projects are discussed in a seminar format. Written reports on each project are submitted at the end of the quarter. Prerequisite: Psychology 112B, 112LB. Only one course from Psychology 112C and 112F-G may be taken for credit.

112F-G Behavioral Research (4-4) F, W. A two-quarter introduction to the practice of behavioral research: generating research ideas, finding and reading previous research, research methods, quantifying observations, sampling, drawing inferences from data, and writing up results. Students propose and conduct their own research project with approval. Corequisite: Psychology 112LF-LG. Prerequisites for 112F: Psychology 9A-B-C and one of the following series: Psychology 10A-B-C, or any other 10A-B-C sequence in the School of Social Sciences, or Social Science 100A-B-C, or Mathematics 2A, 2B, 7. Prerequisites for 112G: completion of the lower-division writing requirement and a passing grade in 112F. Only one sequence from Psychology 112F-G and 112A-B-C may be taken for credit. Psychology 112F and 112M may not both be taken for credit. Formerly Psychology 115A-B.

112LF-LG Behavioral Research Laboratory (2-1) F, W. Corequisite: Psychology 112F-G. Formerly Psychology 115LA-LB.

112M Research Methods in Psychology (4) F. Research methods in psychology for majors who wish to fulfill this requirement separately from upper-division writing. Covers both experimental and descriptive research methods, analysis of results, and reading the psychological literature. Research experience is provided in laboratory sections. Corequisite: Psychology 112LM. Prerequisites: Psychology 9A-B-C; Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences, Social Science 100A-B-C, or Mathematics 2A-B and 7. Psychology 112M and 112F may not both be taken for credit. May not be taken for credit after completion of any other Psychology 112 course.

112LM Research Methods in Psychology Laboratory (2) F. Corequisite: Psychology 112M.

112P Research in Perception and Psychophysics (4). Introduction to design and practice of experiments: students perform auditory, visual, tactile, or other experiments. Emphasis on methodology, finding and reading previous research, generating research ideas, statistical analysis. Students propose and conduct their own final research project with approval. Corequisite: Psychology 112LP. Prerequisites: Psychology 9A-B-C; Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences, Social Science 100A-B-C, or Mathematics 2A-B and 7; Psychology 130A.

112LP Research in Perception and Psychophysics Laboratory (2). Corequisite: Psychology 112P.

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 112A, 112F, 112M, or 112P.

114M MATLAB Programming (4). MATLAB is a mathematical software package for solving quantitative problems often encountered in experimental psychology. Topics include rudiments of programming, statistical analysis of data, matrix algebra, signal processing, graphic visualization, and simulated models of cognitive and perceptual processes. Concurrent with Psychology 235M.

116 Research Methods in Cognitive Development (4). Introduces students of cognitive psychology to experimental design, the laboratory techniques, and the data analysis employed in studies with very young subjects. Specific paradigms vary each quarter. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

119 Special Topics in Research Methodologies (1 to 4). Prerequisites vary. May be repeated for credit as topic varies.

GENERAL PSYCHOLOGY

120A Abnormal Psychology (4). Introduction to psychopathology and behavioral deviations, and the concepts of theories regarding these conditions. Prerequisite: Psychology 7A or 9C. 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. 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 or consent of instructor.

120P Personality Theories (4). A survey of the evolution of personality theory during this century. An overview of major perspectives in the field, with special attention to Freud, Jung, and Adler. Prerequisite: Psychology 7A or 9C. 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.

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.

128 Trends in Psychology (0). Explores current trends in different fields of psychology. Two units of workload credit. Prerequisite: consent of instructor. Pass/Not Pass only. May be repeated for credit as topics vary.

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 or consent of instructor. 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. Prerequisites: Psychology 9A-B-C or consent of instructor. Psychology 130A may not be taken for credit if taken after 131A. Same as Biological Sciences 182.

131B Hearing (4). Auditory perception, the anatomy and physiology of the auditory system, and the physics of sound. Topics include: neural transduction of sound, sensitivity, sound localization, complex sound perception, and hearing loss. Prerequisites: Psychology 9A-B-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.

133P Advanced Topics in Visual Perception (4). Topics in vision related to ophthalmology and optometry. Course for students considering a career in eye care. Prerequisites: 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.

137 Genetics of Sensory and Cognitive Processes (4). Introduction to genetic bases of sensory and cognitive functions. Mutations affecting vision, hearing, learning, and memory in animal model systems. General and specific cognitive abilities and failures in humans. Environmental effects on gene regulation, origin of new functions, and quantitative genetics. Prerequisites: Psychology 9A-B-C or consent of instructor.

139 Special Topics in Perception and Sensory Processes (4). Prerequisites vary. May be repeated for credit as topic varies.

LEARNING AND COGNITION

140C Cognitive Science (4). Introduction to investigations of the structure and function of the mind, from viewpoints of computation, neuroscience, philosophy, and cognitive psychology. Topics include: perception, attention, knowledge representations, learning and memory, action, reasoning, and language. Prerequisite: Psychology 7A or 9B.

140L Principles of Learning Theory (4). Investigation of the learning and memory processes of humans and animals. Basic experimental approaches to learning and memory, empirical results, and theoretical interpretations of the evidence are discussed. Prerequisite: Psychology 7A or 9A.

140M Human Memory (4). Developments in the area of memory; history of memory research; theories of the nature of memory. Visual memory, recognition memory, high-speed scanning, free recall, short-term memory, mnemonics, retrieval, relationship of memory to thinking. Selected theoretical formulations for memory. Prerequisite: Psychology 7A or 9B. Psychology 46A may not be taken for credit after Psychology 140M.

140N Cognitive Neuroscience (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: Psychology 7A or 9A consent of instructor.

141A, B, C Education and Adolescents I, II, III (4, 4, 4). Students tutor young adolescents in an educational setting and reflect on their experiences by documenting events and analyzing them. **141A:** Emphasizes teaching and learning. **141B:** Focuses on adolescence. **141C:** Focuses on the middle school institution and larger educational issues. Pass/Not Pass only.

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.

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 (4). The application of knowledge of human characteristics to the design of equipment, facilities, and environments for human use. Research on attention, perception, learning, and decision-making are applied to problems involving aviation, space, highway safety, industrial safety, consumer products, human-computer interaction, and aging. Prerequisites: Psychology 7A or 9A-B-C.

143P Human Problem Solving (4). Modern developments in the psychology of human problem solving. Topics include: concept identification, arithmetic, sets, logic puzzles, story problems, group problem solving, 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). How the brain and behavior change as a result of experience, with an emphasis on identifying the neurochemical processes through which memory is stored and the parts of the brain that are involved. Prerequisite: Biological Sciences 35 or 110. 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.

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 topics vary.

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.

156A 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.

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 aphasias; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 35 or 110, or consent of instructor. Same as Linguistics 158 and Biological Sciences 160.

157A 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.

159 Special Topics in Semiotics and Language (1 to 4). Prerequisites vary. May be repeated for credit as topics vary.

COGNITIVE NEUROSCIENCE

169 Special Topics in Cognitive Neuroscience (4). Prerequisites vary. May be repeated for credit as topics vary.

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.

174A Asian American Psychology (4). Examines the social and psychological concerns of Asian Americans, e.g., coping with racial prejudice, maintaining bicultural identities, dealing with cross-cultural conflicts in interracial relationships, and trying to reconcile generational differences between immigrant parents and their American-born children. Same as Asian American Studies 141. **(VII-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. **(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. **(VII-A)**

174F Chicano/Latino Psychology (4). Examines research and literature investigating Chicano/Latino ethnicity as a variable influencing behavior. Explores mental health needs and issues of Chicano/Latinos and discusses competent, sensitive methods of mental health service delivery. Prerequisite: Psychology 7A or 9A-B-C. **(VII-A)**

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 (4). Logic and set theory are covered during the first three weeks, using an interactive computer system. The remaining seven weeks are devoted to probability theory and cover elementary concepts from samples spaces to Chebychev's Inequality and the moment generating function. Prerequisite: graduate standing.

203B Introduction to Mathematical Statistics (4). An introduction to statistical estimation and statistical inference. Topics include sufficiency and the Rao-Blackwell Theorem, completeness and the Lehmann-Scheffe Theorem. The method of maximum likelihood is explored in some detail. Inference in linear models covers regression and analysis of variance. Same as Economics 220B.

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.

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.

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.

235M MATLAB Programming (4). MATLAB is a mathematical software package for solving quantitative problems often encountered in experimental psychology. Topics include rudiments of programming, statistical analysis of data, matrix algebra, signal processing, graphic visualization, and simulated models of cognitive and perceptual processes. Concurrent with Psychology 114M.

239 Special Topics in Methodology and Models (4). Current research in cognitive sciences methodologies, concepts, and models are presented. May be repeated for credit as topics vary. Formerly Psychology 249.

240A Virtual Reality: Graphical and Mathematical Foundations (4). An introduction to the background and skills necessary to construct and animate complex virtual reality environments. Prerequisite: one year of calculus and a strong programming background using C or C++.

240B Virtual Reality: Immersion and Interaction (4). An introduction to the techniques of position tracking, motion capture, force feedback, and haptics necessary to make virtual environments immersive and interactive. Prerequisite: Psychology 240A.

240C Virtual Reality: Research Applications (4). An in-depth examination of the application of virtual reality techniques in a variety of research areas. Students implement a large-scale virtual reality project. Prerequisite: Psychology 240B.

249 Special Topics in Virtual Reality (4). Current research in virtual reality techniques, principles, and concepts. Topics will vary. Prerequisite: graduate standing or consent of instructor.

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 (1.3 to 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 Perception Seminar (1.3, 1.3, 1.4). Participants, who include faculty interested in auditory and visual perception/psychophysics, along with interested graduate students, make research presentations and discuss current publications. The seminar also serves as a forum for presentations by visiting researchers. Satisfactory/Unsatisfactory only.

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.

289 Special Topics in Sensation and Perception (1.3 to 4). Current research in the reception and processing of visual and auditory stimuli presented. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

290 Dissertation Research (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 Science Plaza B; (949) 824-5788
Linda Cohen, **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 2001 should be sure to file their application before November 30, 2000.

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 average grade of B, (b) completed the Basic Economics sequence (Economics 20A-B-C) with a minimum grade of a B in at least two of

the three quarters, and (c) completed the lower-division writing requirement.

Transfer-Student Applicants: For transfer-student admission, preference will be given to junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites. All applicants must complete the following required courses: one year of microeconomics and macroeconomics with a minimum average grade of B, and one semester or two quarter courses of approved calculus with a minimum average grade of B.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See page 360.

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 sequence 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 and Economics 30, or equivalent courses.

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, and both Mathematics 2A and 2B or equivalent courses prior to enrolling in Economics 100B.

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

The Honors Program in Economics provides outstanding students an in-depth study of economic theory and an opportunity to work more closely with faculty members in smaller honors-designated courses. In their senior year, students complete an honors thesis devoted to the collection and rigorous analysis of data, demonstrating their achievement of an advanced level of research and analytical skills. The program is open to selected students who are majoring in Economics and admission is based on a formal application that is normally submitted in the spring quarter after students have completed two quarters of calculus and Economics 20A-B. Applicants should have an overall grade point average of at least 3.0 and a grade point average of at least 3.0 in Economics and calculus classes. In the first year of the program, students enroll in Honors Intermediate Economics I, II, III (Economics H100A-B-C), and in the second year, Econometrics I, II, III (Economics 123A-B-C). The honors thesis is usually completed while taking Economics 123C. Upon successful completion of an approved thesis, students graduate with Honors in Economics and their transcript notes that they have completed the Honors Program in Economics. Successful completion of the thesis also satisfies the upper-division writing requirement.

To graduate with Honors in Economics, School requirements must be met and must include 20 courses (80 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 and Economics 30, or equivalent courses.

E. Economics H100A-B-C.

F. Economics 123A-B-C or equivalent.

G. An honors thesis.

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
Duncan Black: Urban economics, economic growth
David Brownstone: Econometrics and applied microeconomics
Linda R. Cohen: Political economy, economics of science and innovation, law and economics
Arthur S. DeVany: Economic theory, industrial organizations
John E. DiNardo: Labor economics and applied microeconomics
Gordon J. Fielding: Urban theory and transportation policy
Kaku Furuya: Macroeconomics, international economics
Michelle R. Garfinkel: Macroeconomic and monetary theory
Garance Genicot: Development economics, applied microeconomics
Amihai Glazer: Political economy
John Johnston: Econometrics
Sheen T. Kassouf: The theory of stochastic speculative pricing
Charles A. Lave: Transportation economics
Jaewoo Lee: International economics, macroeconomics
R. Duncan Luce: Mathematical behavioral science; measurement theory, utility 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
Mark P. Moore: International economics, macroeconomics
Hisahiro Naito: Public economics, international economics
Dale Poirier: Theoretical and empirical econometrics, Bayesian econometrics
Priya Ranjan: International economics, macroeconomics
Gary Richardson: Economic history, immigration, institutions, and economic development
Donald G. Saari: Social choice, voting theory, celestial mechanics, economic theory and mathematical psychology
Stergios Skaperdas: Economic theory, political economy
Brian Skyrms: Game theory and decision making
Kenneth A. Small: Urban economics, transportation economics, discrete-choice econometrics, energy
Justin L. Tobias: Econometrics, Bayesian econometrics, economics of education
Christian Werner: Mathematical geography

Affiliated Faculty

Dennis J. Aigner: Statistical and econometric methodology, efficiency estimation
Marlon G. Boarnet: Urban economics, urban planning, urban economic development
Thomas C. Buchmueller: Economics of health care
Michael Burton: Economic anthropology, households, environmental anthropology, comparative research methodology
Frank Cancian: Anthropology, social stratification, economic anthropology, agriculture, Mexico
Paul J. Feldstein: Health economics
Bernard Grofman: Public choice, law and economics, models of collective decision making

Phillipe Jorion: International finance
Richard McKenzie: Public choice
Robert J. Town: Industrial organization, economics of health care, applied econometrics
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 microeconomics, 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 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, which facilitates student research by providing research assistantships and interdisciplinary seminars on all modes of transportation.

Requirements for the concentration are the same as those described above with the following three exceptions: (1) instead of the third quarter of microeconomics and macroeconomics, students may substitute specified courses such as Discrete Choice Econometrics (Economics 223A), Advanced Travel Demand Analysis (Engineering 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, Political Science, 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 Departments of Economics and Political Science. (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 with an excellent library, as well as special interlibrary loan arrangements with other University of California libraries. The School of Social Sciences provides a computer laboratory. The Economics Department has a small library with current journals and unpublished working papers from other universities. Students also have access to 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

NOTE: Students are reminded that each quarter of a sequential course (i.e., Economics 20A-B-C, 100A-B-C) must be taken in order. Priority for admission to upper-division Economics courses is given to Economics majors and International Studies majors.

LOWER-DIVISION

1 Introduction to Economics (4) F, W, S. An analysis of the problems society faces in organizing itself to provide goods and services. How decisions of government, business, and the individual relate to current economic problems such as unemployment, inflation, poverty, and environmental pollution. Open only to non-Economics majors. Credit will not be given for Economics 1 if taken concurrently or after Economics 20A-B-C. **(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 Science 9A-B-C or 10A-B-C, or Sociology 10A-B-C. Economics 10C and 30 may not both be taken for credit. **(V)**

20A-B-C Basic Economics I, II, III (4-4-4) F, W, S. The fundamentals of economics: microeconomics and macroeconomics. The behavior of firms and of consumers: markets, supply/demand, utility maximization, resource allocation, and efficiency. Government behavior: monetary and fiscal policy, inflation, and unemployment. **(III)**

30 Introduction to Econometrics (4). An introduction to econometrics emphasizing (1) estimating economic relationships, (2) confronting economic theory with facts and testing hypotheses involving economic behavior, and (3) forecasting the behavior of economic variables. Covers the basic classical linear regression model and applies it to real data. Prerequisite: Economics 10A-B or equivalent, and Economics 20A-B-C and Mathematics 2A-B. Economics 30 and 10C may not both be taken for credit. **(V)**

UPPER-DIVISION

100–119: GENERAL ECONOMICS

100A-B-C Intermediate Economics I, II, III (4-4-4) F, W, S. Determinants of supply and demand; operation of competitive and monopolistic markets; imperfections of the market system, explanations of unemployment, inflation, recessions; public policy for macroeconomic problems. Prerequisites: Economics 20A-B-C; Mathematics 2A or equivalent. For 100B: Mathematics 2B and Economics 100A. For 100C: Economics 100B.

H100A-B-C Honors Intermediate Economics 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. Open only to honors program students.

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). Prerequisites: Economics 20A-B-C.

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. Prerequisites: Economics 10A-B and 30, or Social Science 10A-B-C, or equivalent courses. Same as Social Science 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 Science 101C.

123A-B-C Econometrics I, II, III (4-4-4) F, W, S. 123A-B: Specification, estimation, and testing of econometric models. Applications in various areas of microeconomics and macroeconomics. **123C:** Seminar course in which students do an original econometric research project. Prerequisites: Mathematics 2A-B-C and 3A; Economics 10A-B, 30, and 100A-B-C. For 123C: satisfactory completion of the lower-division writing requirement.

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: prior or concurrent enrollment in Economics 10A-B and 30, or equivalent courses; Economics 100A-B.

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 and 30, or equivalent courses; Economics 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. Economics 141B also same as Environmental Analysis and Design E158U.

142A-B-C Industrial Organization I, II, III (4-4-4) F, W, S. 142A: The theory of market structure. Imperfect markets, government policies, and industry performance. **142B:** Regulation and antitrust theory and performance in industries. **142C:** Research in industrial organization. Prerequisites: prior or concurrent enrollment in Economics 10A-B and 30, or equivalent courses; Economics 100A-B. For 142C: satisfactory completion of the lower-division writing requirement.

143K-L-M Economics of Information and Incentives I, II, II (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 and 30, or equivalent courses. For 144C: satisfactory completion of the lower-division writing requirement.

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 Science 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 polices regarding these problems. Emphasis on microeconomic aspects of environmental problems. Prerequisites: prior or concurrent enrollment in Economics 10A-B and 30, or equivalent courses; Economics 100A-B.

145F Economics of the Environment II (4). Applications of the tools covered in Economics 145E to such topics as global warming, destruction of the ozone layer, and emissions trading. Emphasis on independent research papers. Syllabus and classes include writing technique. Prerequisites: Economics 10A-B and 30, or equivalent courses; Economics 145E; and satisfactory completion of the lower-division writing requirement.

145L Economics of Law (4). Examination of several economic concepts which are useful in understanding legal rules: externalities, the assignment of property rights, and Coase's theorem. Examples are drawn from the fields of pollution control, no-fault insurance, medical malpractice, and product liability. Prerequisites: Economics 100A-B or concurrent enrollment in Economics 100B.

146 Public Policy Issues (4). An examination and interpretation of the public policy areas such as schooling, housing and homelessness, occupational licensing, F.D.A. drug approval, credit bureaus, the U.S. Postal Service, and auto emissions. Prerequisites: Economics 10A-B and 30, or equivalent courses; Economics 100A-B-C; satisfactory completion 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. Corequisites or prerequisites: Economics 10A-B and 30 or equivalents recommended. Prerequisites: Economics 20A-B-C. 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: prior or concurrent enrollment in Economics 10A-B and 30, or equivalent courses; 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: Mathematics 2A-B-C; Economics 10A-B and 30, or equivalent courses; Economics 100A-B-C. For 151C: satisfactory completion of the lower-division writing requirement.

152A Economic Anthropology (4). Economic systems in comparative perspective: production, distribution, and consumption in market and non-market societies; agricultural development in the third world. Prerequisite: one course in general science, anthropology, economics, geography, or sociology. Same as Anthropology 125A. **(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 economic relationships of the form that characterize intergroup and intragroup economic processes of many tribal societies. Includes analyses of gift exchange and resource allocation 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). Students write and rewrite papers on topics that are suggested by the models and literature in the "economics of the family." Prerequisites: Economics 10A-B and 30, or equivalent courses; Economics 100A-B-C; satisfactory completion of the lower-division writing requirement. 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 10A-B and 30, or equivalent courses; Economics 100A-B-C or 100A-B and concurrent enrollment in 100C.

161B International Money (4). Open economy macroeconomics and determination of exchange rates. Asset-market approach to the balance of payments. Internal and external balance in the economy. Macroeconomic policies under fixed and floating exchange rates. The international monetary system and institutions. Prerequisites: Economics 100A-B-C or 100A-B and concurrent enrollment in 100C.

161C International Trade and Commercial Policy (4). Determination of trade flows and the relative prices. Gains from trade, the terms of trade, and income distribution. Imperfect competition and international trade. The effect of tariffs, export subsidies, and import quotas. The effects of free and restricted trade on economic welfare. Prerequisites: Economics 10A-B and 30, or equivalent courses; Economics 100A-B or 100A and 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? Prerequisite: Economics 161A.

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 10A-B and 30, or equivalent courses; Economics 100A-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.

201A-B-C Graduate Student Prospectus Seminar (2-2-2). Graduate students present their dissertation prospectus and job market papers to other graduate students and faculty. All graduate students on the job market must enroll and present their job market papers, and all third-year graduate students are strongly encouraged to enroll. Prerequisite: graduate standing.

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:** An introduction to statistical estimation and statistical inference. Topics include sufficiency and the Rao-Blackwell Theorem, completeness and the Lehmann-Scheffe Theorem. The method of maximum likelihood is explored in some detail. Inference in linear models covers regression and analysis of variance. 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 Science 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 or equivalent.

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 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 Science 5 Introduction to Geography. Basic introduction to geography.

5A Introduction to Human Geography (4). Human behavior in a geographical context. Spatial patterns and organization of the cultural, social, and economic activities of man as imposed on and influenced by the earth's physical setting. **(III)**

5B Introduction to Physical Geography (4). An introduction to the physical world we live in. Distribution and dynamics of the earth's air, water, and solid crust. Concepts and principles from climatology and geology. Selected examples from North America and beyond. **(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)**

5D U.S. and World Geography (4). Provides a broad survey of general geographical principles and facts on a world scale as well as introduces students to the broad regional and resource geography of the U.S., emphasizing in particular the interactions of physical and cultural factors. **(III)**

Social Science 18A Evolution of Landforms (4). Introduction to geomorphology; major forces which shape the relief of the earth's surface and the forms which result from their activity. General principles demonstrated using examples from the western United States with special emphasis on California. **(III)**

Social Science 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 Science 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 Science 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 Science 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 discussion of Orange County on environmental, social, and residential problems.

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 Science 5A recommended.

Social Science 119A-Z Special Topics in Geography (4) F, W, S. May be repeated for credit. Prerequisites vary.

THE UNDERGRADUATE MAJOR IN INTERNATIONAL STUDIES

The major in International Studies provides an interdisciplinary perspective on global issues, societies, and cultures. International Studies majors acquire twenty-first-century analytical skills and knowledge that will enable them to understand and contribute to shaping the rapidly evolving global community. The degree in International Studies prepares students for careers in a variety of fields such as international affairs and public policy, international business and finance, international organizations, and academic research and teaching.

Requirements for the major include: a three-course core sequence (Origins of Global Interdependence, Global Issues and Institutions, and Global Economy), three additional lower-division courses, four upper-division courses on a region, five upper-division courses on a theme, and foreign language competence. Faculty advising is an essential part of the major.

International Studies majors are also required to pursue some form of international experience, as explained in detail in requirement F below.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See page 360.

Requirements for the Major

A. Social Science 11, 12, and 13.

B. Three additional lower-division courses from the following list: Anthropology 2A, 2D; Economics 20A, 20B, 20C; History 11, 21C; Political Science 41A, 51A; Social Science 1A; Social Science (Geography) 5A, 5B, 5C, or 5D (one course only to count toward major); Sociology 2, 3; Environmental Analysis and Design E8. (Students should be advised that these courses provide critical "stepping stones" to advanced study. Please consult with a counselor concerning appropriate course work for your chosen upper-division module and educational and career objectives.)

C. Five upper-division module courses, at least three of which must be from one module. The four modules are: Global Issues and Institutions, Global Conflict and Negotiation, Global Role of U.S. and California, and Global Society and Culture. The approved courses are:

Global Issues and Institutions: Anthropology 125A, 125B, 126N, 129; Economics 148A, 161A, 161B, 161C; Political Science 126C, 141A, 141B, 141D, 143A, 144A, 145B, 147A, 147B, 154E, 172A, 173A; Sociology 141, 155, 173; Criminology, Law and Society J128; Environmental Analysis and Design E127, E146, E155U; History 135D, 190 (approval required as topics vary); Management 190 (when title is International Business).

Global Conflict and Negotiation: Anthropology 139 (when title is Conflict Management); Political Science 128B, 134H, 141D, 142G, 143A, 143B, 143D, 146A, 147A, 155E; Social Science 184A, 184B; Sociology 141, 174, 176, 178, 179 (when title is Ethnicity in World Perspective); Environmental Analysis and Design E113; History 126A, 126B, 126C; Psychology and Social Behavior P161S.

Global Role of U.S. and California: Anthropology 125X, 161T; Economics 148A; Political Science 125A, 126C, 142D, 142E, 142F, 142G, 145A, 145B, 147B; Social Science 173I, Sociology 176; Criminology, Law and Society J128; Environmental Analysis and Design E143U; History 140E, 142A, 158A, 158B, 158C, 166.

Global Society and Culture: Anthropology 121D, 121G, 121H, 125A, 125B, 125M, 129, 132A, 132B, 134E, 135A, 136A, 136G, 138P, 138S, 174A; Economics 168A, 168B, Political Science 128A, 138A; Sociology 144, 155, 165A, 173, 178, 179 (when title is Ethnicity in World Perspective); Environmental Analysis and Design E102, E146; Psychology and Social Behavior P124D.

D. Four upper-division Regional Studies courses, at least three of which must cover one geographic region. These regions are: Europe, Middle East/Africa, Asia/Pacific Rim, and the Americas (excluding U.S.A.). Approved courses are: Anthropology 121E, 135H, 138O, 138P, 138Q, 138S, 138T, 160–169 (excluding 161T and 162B); Political Science 141C-D, 142C, 150–159; Social Science 172F, 172G, 176A; Sociology 175A, 175B, 175C; Criminology, Law and Society J106; History 110–129, 130A-B, 161–169, 170–175, 177–178.

The list of approved Regional Studies courses is available on the World Wide Web at http://hypatia.ss.uci.edu/ssrc/instud.htm.

E. Competency in an approved modern international language other than English. An international language is spoken in at least two countries. Competency is established by completion of *one course beyond* the 2A level. The language requirement may be met through: (1) language courses at UCI, (2) language courses taken during study abroad, (3) a proficiency examination, or (4) courses taken at another college-level institution when the language is not offered at UCI. The following languages will automatically be approved: Chinese (Mandarin), French, German, Italian, Japanese, Korean, Spanish, and Russian. Other languages will be considered on a case-by-case basis by petition. (Students are strongly encouraged to go beyond these minimal requirements with additional work in language, literature, and culture courses taught in the language.)

F. International Studies majors are also required to pursue some form of international experience for a minimum of one quarter. Majors are encouraged to study abroad through the Education Abroad Program (EAP) or the International Opportunities Program (IOP), which are available for periods of a quarter, semester, year, or summer. When this is not possible, work overseas (through IOP) or a domestic internship with the UCDC Internship Program, the Washington D.C. Center Program, or the Social Science Internship Program (Social Science 196 or 197) with an international focus may be substituted.

HONORS PROGRAM IN INTERNATIONAL STUDIES

The Honors Program allows International Studies majors to engage in research leading to the completion of an honors thesis. The topic for the honors thesis is selected by the student, in consultation with a faculty advisor, and should reflect a theme consistent with the student's module in the International Studies major. The Honors Program is open to all junior and senior International Studies majors with an overall GPA of 3.0 and a 3.5 GPA in the major. Successful completion of a written honors thesis in the Social Science H158C course satisfies the upper-division writing breadth requirement.

During the spring quarter of the junior year or during the summer before the senior year, students formally apply to the Honors Program. Students will be notified of their selection to the Honors Program by September 1. In the fall quarter of the senior year, students enroll in Social Science H158A, Honors Research Seminar. In this course, each student formulates a written research plan (i.e., prospectus) for the honors thesis. Students also select a faculty member who agrees to supervise the research, evaluate the written work, and approve the honors thesis. In the winter quarter of the senior year, students enroll in Social Science H158B, Honors Thesis Research, with their faculty advisor. The faculty advisor supervises and evaluates data collection and analysis and reads and edits chapter drafts. In the spring quarter of the senior year, students enroll in Social Science H158C, Honors Thesis, with their faculty advisor. The thesis is to be completed by the student and approved by the advisor prior to the end of the quarter.

Honors students must also demonstrate a high level of language proficiency by completing two courses beyond the 2A level in language, literature, or culture taught in their chosen international language. A list of acceptable courses is available from the counseling office.

International Studies majors are also required to pursue some form of international experience, as explained in detail in major requirement F.

DEPARTMENT OF LINGUISTICS

5221 Social Science Plaza B; (949) 824-7504

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 54–59.

School Requirements: See page 360.

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 (selected from Philosophy/Social Science 30 *or* 104, Philosophy/Social Science 105A-B-C) or computation (selected 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

Naoki Fukui: Syntactic theory, comparative syntax, structure of Japanese
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: Semantics, syntax, philosophy of language
Bernard Tranel: Phonological theory, French linguistics
Moira Yip: Phonological theory, Chinese phonology, morphology

Affiliated Faculty

Michael Fuller: Classical Chinese grammar and literature
Gregory Hickok: Neural organization of language
Gavin Huntley-Fenner: Language acquisition, semantics
Mary-Louise Kean: Biological foundations of language
Virginia A. Mann: Speech perception, psycholinguistics
Terence Parsons: Semantics, philosophy of language
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 toward 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 Science 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)**

2 Discovering Language (4). Explores how society works and plays with language. Addresses various modern-world issues in computer technology, politics, advertising, show business, the law, and other areas where language plays an important role and where linguistics can provide the layperson special insights.

3 Introduction to Linguistics (4). Emphasis on the notion that language is a remarkable achievement of the human mind. Current insights into the nature of language. Survey of various subfields of linguistics. Introduction to linguistic analysis. **(III or V)**

10 Introduction to Phonology (4). Basic concepts in phonetic description and phonological analysis. Prerequisite: Linguistics 3. 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. **(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 with grades of C or better; Mathematics 2A-B-C; Mathematics 6A or ICS 6A; Mathematics 6B; Mathematics 6C or 3A. Same as Information and Computer Science 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 10 or 20 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 100 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 156A.

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 157A. 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.

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 aphasias; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 35 or 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.

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.

169 Special Topics in Language Studies (4). Prerequisites vary. May be repeated for credit as topic varies.

170–179: HISTORICAL LINGUISTICS

170 Historical Linguistics (4). Study of language change. Methods of historical analysis of language. Classification of languages and aspects of language change by internal reconstruction and the comparative method. Prerequisite: Linguistics 3. Recommended: Linguistics 10.

172 History of English (4). External (historical and social) and internal (linguistic) changes which have affected the English language from its Germanic roots to the present day. Prerequisite: Linguistics 3. Same as English and Comparative Literature E 184.

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

209 Topics in Linguistics (1 to 4). Focuses on ongoing research in linguistics. Variable units based on course content as determined by Department. May be repeated for credit as topics vary.

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 (1 to 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.

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 157A.

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.

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 (1 to 4). Prerequisite: graduate standing and consent of instructor. May be repeated for credit as topic varies.

DEPARTMENT OF LOGIC AND PHILOSOPHY OF SCIENCE

755 Social Science Tower; (949) 824-1520
Penelope Maddy, **Department Chair**

The Department of Logic and Philosophy of Science (LPS) brings together faculty and students interested in a wide range of topics loosely grouped in the following areas: general philosophy of science; philosophy of the particular sciences; logic, foundations and philosophy of mathematics; and philosophy of mathematics in application. LPS enjoys strong cooperative relations with UCI's Department of Philosophy; in particular, the two units jointly administer a single graduate program leading to the Ph.D. in Philosophy. LPS also has strong interconnections with several science departments, including Mathematics, Physics, and Information and Computer Science, as well as the School of Biological Sciences, the Department of Economics, and the graduate concentration in Mathematical Behavioral Sciences.

Graduate Program

Faculty

Aldo Antonelli: Logic, philosophy of mathematics, history of analytic philosophy
Jeffrey Barrett: Philosophy of science, philosophy of physics, philosophy of quantum mechanics, epistemology
Penelope Maddy: Philosophy of mathematics, philosophy of logic, philosophy of science, history of analytic philosophy
David Malament: Philosophy of physics, foundations of geometry, foundations of relativity theory
Brian Skyrms: Philosophy of science, decision theory, game theory, philosophy of biology, epistemology, metaphysics
Kyle Stanford: Philosophy of science, philosophy of biology, history of modern philosophy, metaphysics

Affiliated Faculty

Francisco Ayala, *Bren Professor of Ecology and Evolutionary Biology and of Philosophy:* Evolutionary biology, philosophy of science, philosophy of biology
Patricia Churchland, *UC President's Professor of Philosophy, UCSD:* Philosophy of neuroscience and psychology
Paul Churchland, *Professor of Philosophy, UCSD:* Philosophy of science, philosophy of mind, artificial intelligence and cognitive neurobiology, epistemology, and perception
Paul Eklof, *Professor of Mathematics:* Mathematical logic
Matthew Foreman, *Professor of Mathematics and Philosophy:* Mathematical logic
Steven Frank, *Professor of Biological Sciences:* Evolutionary biology

Donald Hoffman, *Professor of Cognitive Sciences and of Information and Computer Science:* Human and machine vision
Duncan Luce, *UCI Distinguished Professor Emeritus of Cognitive Sciences and Economics:* Mathematical behavioral science
D.A. Martin, *Professor of Mathematics and Philosophy, UCLA:* Logic, set theory, philosophy of mathematics
Robert May, *Professor of Linguistics:* Semantics, syntax, philosophy of language
James McGaugh, *Research Professor of Neurobiology and Behavior:* Neurobiology of learning and memory
Yiannis Moschovakis, *Professor of Mathematics, UCLA:* Set theory, recursion theory
Louis Narens, *Professor of Cognitive Sciences:* Measurement, logic, and metacognition
Riley Newman, *Professor of Physics:* Experimental particle physics and gravitational physics
Terence Parsons, *Professor of Philosophy, UCLA:* Philosophy of language, metaphysics
Donald Saari, *UCI Distinguished Professor of Economics and Mathematics:* Mathematical economics, mathematical behavioral science, celestial mechanics
Jonas Schultz, *Professor of Physics:* Experimental particle physics
Norman Weinberger, *Professor of Neurobiology and Behavior and of Cognitive Sciences:* Neural bases of attention and learning

The Department of Logic and Philosophy of Science and the Department of Philosophy jointly administer a Ph.D. program in Philosophy with two independent tracks: the Philosophy track and the LPS track. Both tracks begin from a common core of requirements in standard philosophical fields (e.g., history of philosophy, logic, ethics, metaphysics/epistemology) and branch off thereafter; both lead to the Ph.D. degree in Philosophy. Applicants are advised to apply to the unit whose faculty, areas of specialization, and curriculum correspond best with their interests. Students are expected to reside in the same unit as their primary advisor, but faculty in both units are available for all other academic purposes (course work, independent studies, committee membership, and more). See the Department of Philosophy in the School of Humanities for a description of the Philosophy track.

ADMISSIONS

Applicants for the LPS track must have a bachelor's degree, but there is no formal requirement as to the field of that degree. The most natural undergraduate majors for LPS graduate students would be philosophy, mathematics, or the sciences, but those with other degrees who are interested in the LPS fields should feel free to apply.

Complete applications must include GRE scores, transcripts, letters of recommendation, and a writing sample. The deadline for application is January 15.

Several forms of incoming fellowships are available on a competitive basis; these include a stipend, student fees, and tuition (for out-of-state students). In subsequent years, some additional fellowship funding is available, but students in good standing are most often supported with teaching assistantships.

REQUIREMENTS OF THE LPS TRACK

All required courses must be completed with a grade of B or better.

The **History of Philosophy Requirement** provides a broad perspective. Graduate courses in three out of the following four areas—Modern Rationalism, Modern Empiricism, Kant, and Twentieth Century—must be completed by the end of the seventh quarter in residence.

The **Logic Requirement** acquaints students with the fundamentals of modern logic: elementary set theory, metalogic, effective procedures and Gödel's incompleteness theorems. Social Science 205A, 205B, and 205C must be completed by the end of the seventh quarter in residence.

The **Field Requirement** provides exposure to a range of philosophical disciplines. One graduate course in moral philosophy and one graduate course in metaphysics/epistemology must be completed by the end of the seventh quarter in residence. (These courses may not also be used to satisfy the History Requirement.)

The **Philosophy of Science Requirement** provides exposure to a range of philosophy of science, from general philosophy of science to the philosophies of particular sciences (e.g., physics, biology), to the philosophies of mathematics and logic. Three selected courses from Social Science 230, 231, 232, 236, and 237 must be completed by the end of the seventh quarter in residence. (These courses may be repeated as topics vary.) Courses used to satisfy the Philosophy of Science Requirement may also be used to satisfy the History or Field Requirements.

The **Tools of Research Requirement** provides some flexibility for students with various levels of interest in pursuing the philosophy of a particular science. So, for example, a student most interested in historical issues in the philosophy of mathematics might benefit most from the study of German, while a student most interested in the philosophy of quantum mechanics should take a series of graduate courses in physics. (Students wishing to specialize further in the philosophy of a particular science might wish to pursue more demanding options; see the Mathematics emphasis, below.) To satisfy this requirement, a student must pass an examination on an appropriate foreign language or receive a grade of B or better in three appropriate graduate courses in a discipline or disciplines outside philosophy by the end of the ninth quarter in residence. Though the discipline(s) here must be outside philosophy, they might be taught by Philosophy or LPS faculty (e.g., a course in advanced set theory with a Philosophy or Social Science number taught by an LPS faculty member). The two-hour language examination will be administered by an LPS faculty member and will require the student to translate (with the aid of a dictionary) a passage or passages from philosophical or scientific authors.

The **Portfolio Requirement** ensures that students have acquired dissertation-level skills in the writing of philosophy: e.g., the ability to isolate, understand and evaluate arguments in the philosophical literature; the ability to assimilate secondary literature; the ability to formulate and defend an original philosophical thesis. The portfolio is designed to display these skills. To satisfy this requirement, a student must submit an extended writing sample, most often consisting of several individual papers, that demonstrates the skills necessary to write a Ph.D. dissertation. (A successful portfolio typically consists of several papers totaling around 80 pages. These may be revisions of term papers. Each paper should present and defend a definite thesis and should be accessible to faculty members unfamiliar with the literature in question. The papers in the portfolio need not be of publishable quality, but they must, collectively, demonstrate the specified skills.) Portfolios will be evaluated by the entire LPS faculty. (LPS track students may request that relevant Philosophy Department faculty also be present at the evaluation meeting.) Portfolios must be submitted by the end of the fourth week of the seventh quarter.

The **Candidacy Examination** demonstrates that the student has a viable dissertation topic and an adequate grasp of related literature. To satisfy this requirement, a student must prepare and be examined on a reading list of canonical literature in the area of the dissertation and a brief (15-20 page) dissertation proposal. The reading list should in effect define the context of the proposed dissertation. The examination must be completed by the end of the tenth quarter in residence.

Dissertation Defense. Students must pass a final oral examination focussing on the content of the dissertation administered by the Dissertation Committee.

REQUIREMENTS OF THE LPS TRACK EMPHASIS IN MATHEMATICS

In addition to the LPS track described above, there is a more demanding option open to LPS students wishing to specialize in the foundations and/or philosophy of mathematics. Faculty in the UCI and UCLA Departments of Mathematics participate in the Mathematics emphasis. Students in the emphasis take courses and receive advising from these participating Mathematics professors, as well as from the faculty of LPS and the Philosophy Department. Mathematics emphasis students must satisfy the following requirement in addition to the usual LPS track requirements:

Mathematics Requirement. A student must receive a grade of B or better in six graduate courses in mathematics. (Some of these courses may also be used to satisfy the Tools of Research Requirement.) In addition, the student's Candidacy and Dissertation Committees must include an active member from the UCI or UCLA Departments of Mathematics.

SALZBURG EXCHANGE PROGRAM

LPS and the Department of Philosophy jointly administer an Exchange Program with the University of Salzburg. The program has two parts. The Scholarly Exchange provides opportunities for faculty and graduate students in LPS and Philosophy to visit Salzburg and for faculty and graduate students from Salzburg to visit one or the other of the UCI units. The Program also sponsors joint conferences, held alternately in Irvine and in Salzburg; these are co-sponsored by Salzburg and the UCI Interdisciplinary Program in the History and Philosophy of Science.

To be eligible for the Salzburg Exchange, a graduate student must have advanced to candidacy. The selected student spends one semester in Salzburg, usually teaching one course in the general area of the thesis topic. An upper-division course may be taught in English, but lower-division courses must be taught in German. (Some previous visitors have learned serviceable German by attending a Goethe institute during the preceding summer.) Typically, a Salzburg visitor will receive a Salzburg Fellowship intended to cover travel expenses, and a stipend; those who teach while in Salzburg will also receive a salary intended to cover living expenses (including health and dental insurance).

Applications from LPS graduate students (including a curriculum vita and syllabi for courses that might be taught) should be sent to the LPS Salzburg Exchange Director by November 1.

Courses in Logic and Philosophy of Science

LOWER-DIVISION

Social Science 29 Critical Reasoning (4). Introduction to analysis and reasoning. The concepts of argument, premise, and conclusion, validity and invalidity, consistency and inconsistency. Identifying and assessing premises and inferences. Deductive versus inductive reasoning, and introduction to the probability calculus. Evaluating definitions. Informal fallacies. Same as Philosophy 29. (V)

Social Science 30 Introduction to Symbolic Logic (4). An introduction to the symbolism and methods of both propositional and quantificational logic, including evaluation of arguments by the techniques of natural deduction and semantic tableaux. Same as Philosophy 30. (V)

Social Science 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. Same as Philosophy 31. (V)

Social Science 41 Scientific Inquiry (4). Introduces the ways of science focusing on scientific methods and practices. Concrete historical examples of successful scientific inquiry are used including proposed solutions. The foundations and use of the social sciences to study scientific inquiry are examined.

Social Science 104 Introduction to Logic (4). Introduction to sentence logic, including truth tables and natural deduction; and to predicate logic, including semantics and natural deduction. Same as Philosophy 104.

Social Science 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: Social Science 104 or an upper-division course in mathematics, or consent of instructor. Social Science 105A and Mathematics 151 may not both be taken for credit. Same as Philosophy 105A.

Social Science 105B Metalogic (4). Introduction to formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Löewenheim-Skolem theorems. Prerequisite: Social Science 105A or consent of instructor. Social Science 105B and Mathematics 150 may not both be taken for credit. Same as Philosophy 105B.

Social Science 105C Undecidability and Incompleteness (4). Introduction to the formal theory of effective processes, including recursive functions, Turing machines, Church's thesis, and proofs of Göedel's incompleteness theorem for arithmetic, and Church's undecidability theorem for first-order logic. Prerequisite: Social Science 105B or consent of instructor. Social Science 105C and Mathematics 152 cannot both be taken for credit. Same as Philosophy 105C.

Social Science 106 Topics in Logic (4). Selected topics in mathematical or philosophical logic. Prerequisite: Social Science 105B or consent of instructor. May be repeated for credit as topics vary.

Social Science 107 Effectively Computable Functions and Degrees (4). Aims to provide an introduction to recursive function theory, with special emphasis on the theory of the recursively enumerable sets of natural numbers and their "fine structure" under various notions of reducibility. Same as Philosophy 107.

Social Science 108 Topics in Probability, Induction, and Decision Theory (4). Selected topics in probability, induction, and decision theory. May be repeated for credit as topics vary.

Social Science 110 Topics in the Theory of Knowledge (4). One or more topics in the theory of knowledge, e.g., the nature of rational justification, of perceptual knowledge, of a priori knowledge. May be repeated for credit as topics vary.

Social Science 111 Topics in History of Analytic Philosophy (4). Review of one or more central theories or figures in the history of analytic philosophy. Emphasis is on the study of original sources, especially writings of Frege, Russell, Schlick, Carnap, and Quine. Topics include the nature of meaning and truth, the synthetic/analytic distinction, and scientific knowledge. May be repeated for credit as topics vary.

Social Science 112 Topics in Modern Philosophy (4). Focuses on the works of one or more of the central philosophical figures of the modern period (e.g., Descartes, Leibniz, Hobbes, Locke, Hume, Kant) or on the treatment of one or more central philosophical problems by a number of these figures. May be repeated for credit as topics vary.

Social Science 113 Topics in Metaphysics (4). Examines central philosophical questions concerning our own fundamental nature and that of the world around us (e.g., causation and necessity, determination, free will, personal identity, the mind-body problem). May be repeated for credit as topics vary.

Social Science 130 Topics in Philosophy of Science (4). Selected topics in contemporary philosophy of science, e.g., the status of theoretical entities, the confirmation of theories, the nature of scientific explanation. May be repeated for credit as topics vary. (IV)

Social Science 131A Topics in Philosophy of Physics (4). Selected topics in the philosophy of physics, e.g., the interpretation of quantum mechanics, the nature of spacetime, the problem of quantum field theories. May be repeated for credit as topics vary. Same as Philosophy 141A.

Social Science 131B Geometry and Spacetime (4). An examination of issues concerning the mathematical and philosophical foundations of the special theory of relativity. Among topics discussed is the alleged conventionality of simultaneity. Same as Philosophy 141B.

Social Science 131C Foundations of Quantum Mechanics (4). An examination of the standard von Neumann-Dirac formulation of quantum mechanics. The quantum measurement problem is discussed along with several proposed solutions, including GRW, many-worlds, many-minds, and Bohm's theory. Same as Philosophy 141C.

Social Science 131D Probability and Determinism (4). An examination of a number of interrelated issues concerning determinism and probability in physics. Includes the senses in which Newtonian mechanics is and is not deterministic and a discussion of the probabilistic structure of quantum mechanics. Same as Philosophy 141D.

Social Science 132 Writing/Philosophy of Biology (4). Philosophy of biology, e.g., scientific method in biology, the structure of evolutionary theory, teleology, ethics, and evolution. Course work includes one 4,000-word and four 1,000-word papers. Prerequisites: satisfactory completion of the lower-division writing requirement; Philosophy 40 recommended as background. Same as Biological Sciences 142 and Philosophy 142.

Social Science 133 Topics in Philosophy of Logic (4). Selected topics in the philosophy of logic, e.g., the nature of logical truth and our knowledge of it, the status of propositions, definite descriptions, and existential presuppositions. May be repeated for credit as topics vary.

Social Science 134A Introduction to Philosophy of Mathematics (4). Historical background (e.g., Kant), the three great schools at the turn of the century (logicism, formalism, intuitionism), the positivists and their critics (Carnap, Quine), contemporary views and problems (e.g., Quine, Benacerraf). Same as Philosophy 147A.

Social Science 134B Topics in Philosophy of Mathematics (4). Further historical or contemporary issues in the philosophy of mathematics. May be repeated for credit as topics vary.

Social Science 135 Topics in Philosophy of Psychology (4). Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience. May be repeated for credit as topics vary.

Social Science 136 Topics in Philosophy of Social Science (4). Selected topics in the philosophy of the social sciences, e.g., is their goal to understand behavior or to predict and control it?; are they normative and the natural sciences not?; do they incorporate philosophical doctrines about language and mind? May be repeated for credit as topics vary.

GRADUATE

Social Science 205A Set Theory (4). The basic working vocabulary of mathematical reasoning. Topics include: sets, Boolean operations, ordered n-tuples, relations, functions, ordinal and cardinal numbers. Same as Philosophy 205A.

Social Science 205B Metalogic (4). Formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Loewenheim-Skolem theorems. Prerequisite: Social Science 205A. Same as Philosophy 205B.

Social Science 205C Effective Processes (4). Formal theory of effective processes, including recursive function, Turing machines, Church's thesis, and proofs of Goedel's incompleteness theorem for arithmetic, and Church's undecidability for first-order logic. Prerequisite: Social Science 205B. Same as Philosophy 205C.

Social Science 206 Topics in Logic (4). Same as Philosophy 206. May be repeated for credit as topics vary.

Social Science 210 Topics in Logic and Philosophy of Science (4). May be repeated for credit as topics vary.

Social Science 230 Topics in Philosophy of Science (4). Same as Philosophy 240. May be repeated for credit as topics vary.

Social Science 231 Topics in Philosophy of Physics (4). Same as Philosophy 241. May be repeated for credit as topics vary.

Social Science 232 Topics in Philosophy of Biology (4). Same as Philosophy 242. May be repeated for credit as topics vary.

Social Science 236 Topics in Philosophy of Logic (4). Same as Philosophy 246. May be repeated for credit as topics vary.

Social Science 237 Topics in Philosophy of Mathematics (4). Same as Philosophy 247. May be repeated for credit as topics vary.

DEPARTMENT OF POLITICAL SCIENCE

5229 Social Science Plaza B; (949) 824-5361
Mark P. Petracca, **Department Chair**

Undergraduate Program

The Department of Political Science offers a wide variety of courses at the introductory, lower-division, and more specialized upper-division levels. Courses in both micropolitics (individual and group politics) and macropolitics (politics at the state and international levels) are offered. The curriculum is organized into five areas: American politics and society, political theory, international relations, comparative politics, and public law. The Department also offers an Honors Program in Political Science for juniors and seniors, culminating in a senior honors thesis.

The Department is composed of a strong and diverse faculty especially interested in analyzing central questions of political science related to such topics as policy-making, political structures, participation, conflict, change and development, power and authority, and interstate relations. The faculty has particular strength in interdisciplinary approaches, in comparative analysis, and in the application of quantitative data to political science issues.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See page 360.

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 Political Science, is designed to provide Political Science and other students with professional experience in the fields of government, nongovernmental organizations, the media, law, business, consulting, and others. The program is open to all sophomores, juniors, and seniors.

This program provides a selection of internship opportunities open to students by intern-sponsors, as available. Students also may create their own internship opportunities, consistent with Departmental guidelines. Students are required to enroll in Political Science 183 during the quarter of their internship. This course, supervised by the internship coordinator and participating members of the faculty, is offered Pass/Not Pass and cannot be used to satisfy upper-division Political Science requirements.

Information and applications are available in the Department office.

Political Science Minor Requirements

Requirements for the minor in Political Science are met by taking seven political science courses (28 units) as specified below:

A. One course selected from Political Science 6A, 6B, or 6C.

B. Three upper-division political science courses, chosen from one Political Science module.

C. Three additional courses in political science, chosen from those numbered Political Science 6A, 6B, 6C, 20–79, or 120–179.

Graduate Program

Participating Faculty

Alison Brysk: International relations, Latin American politics, human rights
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
Creel Froman: Human analysis
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
Cecelia Lynch: International relations, peace politics, and international law
Richard Matthew: International politics, environmental policy
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
Elora Shehabuddin: International political economy, comparative politics of Islam, South Asian studies
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 Sweet: 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
Katherine Tate: African-American and minority politics, voting behavior, public opinion and American elections, state and urban politics
Carole J. Uhlaner: Comparative political participation, formal models of political behavior
Robert Uriu: International relations, international political economy, Japanese political economy
Martin Wattenberg: American political behavior and institutions

The Department of Political Science offers a 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 Political Science faculty.

A set of three papers, normally completed by the third year of study, tests the student's competence in a set of major domains for intellectual inquiry. These domains are determined by the student and the Political Science Graduate Director. Upon successful completion of these papers and demonstration of competence in mathematics and a foreign language or an advanced research skill, a candidacy committee is appointed to oversee the qualifying examination and the formal advancement to candidacy. Students are expected to advance to candidacy by the ninth quarter of graduate study.

After the student advances to candidacy, the doctoral committee, usually composed of three members of the candidacy committee, reviews a dissertation prospectus and supervises work toward

completion of the dissertation. Within six months of the oral qualifying examination (the formal advancement to candidacy), students are expected to meet with their doctoral committee, in order to discuss with the members a dissertation prospectus.

Concentration in Public Choice

Public Choice is an interdisciplinary field, at the intersection of political science and economics, which draws on sophisticated quantitative tools to model the functioning of political institutions. Public Choice examines such areas as theories of voter and party choice; the theory of constitutions; the theory of committees and elections; models of regulation; problems of public goods and externalities; rent-seeking models; and issues in social choice, social welfare, and demand revelation.

This concentration is administered by an interdisciplinary committee of faculty from the Departments of Political Science and Economics. Students who elect this concentration are admitted under the normal procedures for the program in Political Science and must fulfill all the requirements for the Political Science degree, with the following modifications:

(1) Students must complete the three-quarter core sequence in Public Choice, which is taught jointly by Political Science and Economics faculty. This sequence is usually taken in the student's second or third year.

(2) Students must complete three additional graduate-level, four-unit courses in related fields with the consent of their graduate advisor, chosen from a set of courses designated by the interdisciplinary committee. The courses chosen are to be tailored to the individual interests and academic background of the student and usually will include at least two Economics courses (such as Econometrics, Game Theory, and Law and Economics) and one Political Science course (such as those on electoral systems, party systems, constitutions, courts).

(3) Students are expected to write their dissertation on a topic related to Public Choice. Usually the dissertation advisor will be a Political Science member of the interdisciplinary committee.

Concentration in Political Psychology

The last two decades have seen an explosion of interest in the field of political psychology. UCI's graduate concentration is part of this development, but enjoys a rather distinctive place. The concentration offers students a broader education than is typically available at other institutions. In this vein, the program aims to provide: (1) a strong background in both political science and psychology; (2) an emphasis on theoretical and conceptual issues as well as empirical and methodological ones; and (3) a familiarity with research being done outside of the United States as well as within it. In this context, a number of research concerns central to the participating faculty are considered, including: social change and democratization, ideology, altruism, social and political identity, public policy, community building, mass media effects, voting behavior, and international integration. Believing in academic community, the concentration's sponsoring faculty offer a host of activities including colloquia, reading groups, and joint research opportunities to facilitate contact between students and faculty and among the students themselves.

Requirements. The purpose of the concentration is to provide a course of study which supplements the Ph.D. degree in Political Science. Therefore, students are required to complete all degree requirements for the Ph.D. stipulated by the Department of Political Science. As part of or in addition to these requirements, students must take five courses: Introduction to Political Psychology I and II (Political Science 285A and 285B), and three graduate psychology courses which provide a strong background in psychology (selected from an approved group which includes courses such as Personality in Development, Society and Pathology, Personality Assessment, Proseminar in Cognitive Science, and Human Information Processing). These courses are taught in the Department of Cognitive Science in the School of Social Sciences and the Department of Psychology and Social Behavior in the School of Social Ecology.

Courses in Political Science

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)**

43D Global Security and Cooperation (4). Examination of global conflict and cooperation since World War II, and future prospects. The Cold War, nuclear arms race, regional conflicts, arms proliferation and control, deterrence theory, psychology of conflict, governmental and nongovernmental efforts to promote global peace and cooperation. Formerly Political Science 143D. **(VII-B)**

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. **(III)**

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.

121E Public Policy Analysis (4). Examines different approaches to the analysis of public policy with differing notions of what constitutes good policy, the role of government, and how citizens participate in policy-making. Suggests a policy-design perspective which builds upon other frameworks but concentrates on goals, implementation structures, tools, and rationales. Prerequisites: Environmental Analysis and Design E8 and E109U. Same as Environmental Analysis and Design E157U.

122A American Metropolitan Politics (4). An analysis of the politics of urban and suburban cities. Main themes include alternative explanations of how political power is exercised and how policy decisions are made for urban governments; the structure of local political systems, including the problems of metropolitanism and federalism; the major policy problems facing the urban area, particularly from the perspective of the "underclass."

122B California Politics (4). Explores California state politics in comparison to other states in such dimensions as: nature of electoral competition, state constitutions, lobbying patterns, gubernatorial leadership, scope and innovativeness of major policies, relationship of politics and policies to differing electoral orientations and economic conditions.

122C The American Electorate (4). Provides an overview of how polls are conducted, and how they can be manipulated by question wording, sampling techniques, interviewing procedures, and context. Public attitudes toward Congress are examined, and students analyze survey data on their own as a research project.

123A Parties and Political Organizations (4). A consideration of the role that parties and other political organizations play in the American political process. Also looks at the development and significance of PACs, interest groups, and social movements as vehicles for democratic participation.

123B Representation and Redistricting (4). Deals with classical theories of representation: issues of racial and political representation in U.S. legislatures and city councils; proportional representation models and comparative election systems. Prerequisite: Political Science 21A.

123C Reforming American Politics (4). Assesses the demands and prospects for political reform in America. Where is political reform most needed? Why? What form shall it take? Focuses specifically on ethics of public decision-making, professionalization of American politics, institutional designs for democratic governance.

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.

124A The Politics of Protest in the U.S. (4). Examines the Civil Rights movement, the Black Power movement, and the women's movement in light of existing social movement theories. The theories are used to illuminate the three cases, and the cases are used to critique and revise the theories. **(VII-A)**

125A The United States Congress (4). Does the Congress do a good job of representing the American citizenry? Is it the most appropriate mechanism for the creation, resolution, and implementation of public policy? Prerequisite: satisfactory completion of the lower-division writing requirement.

126A Mexican-Americans and Politics (4). Examines political development of Mexican-Americans. Topics include their "territorial" roots in the Southwest, demographics, political leadership and organization; policy issues of immigration, bilingualism, education, and economics; relations with other minority groups; the role of Mexican-Americans in U.S.–Mexico relations. **(VII-A)**

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. **(VII-A)**

126D Urban Politics and Policy (4). Examines the economic limits of cities and welfare policy. Addresses such issues as why are the poor concentrated in the central cities? Which anti-poverty programs will work best in the cities? Which level of government is best able to combat poverty in the U.S.?

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 or consent of instructor. Same as Economics 141A-B-C. Political Science 127B also same as Environmental Analysis and Design E158U.

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, neoconservatism. 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.

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.

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.

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.

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.

138A Moral Choice During the Holocaust (4). Considers moral choice by comparing some of the major theories of moral choice with empirical examinations of moral exemplars during one of the most difficult periods in recent history: the Holocaust. Prerequisite: satisfactory completion of the lower-division writing requirement.

139 Special Topics in Political Theory and Methods (4). May be repeated for credit as topic varies.

140–149: INTERNATIONAL RELATIONS

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. **(VII-B)**

141C International Political Economy of East Asia (4). Integration of theoretical perspectives in international political economy with the study of economic development in East Asia, with special emphasis on regional integration. **(VII-B)**

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. **(VII-B)**

141E U.S. Foreign Policy Toward Asia (4). U.S. policy toward the countries of East Asia: bilateral and regional security relationships, U.S. economic relations with the major Asian countries, the development of regional institutions, and human rights. **(VII-B)**

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.

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.

143E Globalization and Its Discontents (4). Reviews current literature on globalization and its impact on global, regional, and domestic politics. Explores how different states, nations, and cultures respond to common global predicaments and opportunities emanating from the international economy and the global institutions associated with it. **(VII-B)**

143F Intelligence in International Politics (4). Intelligence agencies, activities, and functions—their impact on international politics; how governments and societies seek to control intelligence agencies and activities; and how intelligence agencies work—their techniques, resources, technology, problems, successes, and failures.

144A Approaches to International Relations (4). Reviews theoretical and methodological approaches to the study of international relations using contending perspectives to analyze power and influence, capabilities, interdependence, reciprocity, international regimes, anarchy, cooperation, imperialism, and hegemony.

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. **(VII-B)**

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. **(VII-B)**

148B United Nations (4). Designed to familiarize students with the inner workings of the most important international organization in the world—the United Nations. Its purpose, structure, and influence on different regions of the world is discussed at length. Looks at other international and regional organizations. **(VII-B)**

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)**

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)**

153A Latin American Politics (4). Explores the common political dynamics of Latin America, as well as the political histories and prospects of selected countries of the region. Places Latin American politics in an analytical framework derived from comparative politics. **(VII-B)**

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. **(VII-B)**

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.

153E Human Rights (4). Examines the causes and consequences of human rights violations with a focus on Latin America. What are human rights? When and where are they violated? What political mechanisms are available to deal with human rights problems? How effective are they? **(VII-B)**

153F Social Movements in Latin America (4). Explores leading issues in the study of social movements, through a series of Latin American cases. Provides a framework for thinking about the relationship between social forces and the political system, as well as knowledge of experiences important for studying Latin American politics. **(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.

154F Peoples and Cultures of Post-Soviet Eurasia (4). Examines the cultures and political conflicts of the more than 130 indigenous ethnic groups in the European and Asian territories of the former U.S.S.R. Emphasis is on the theoretical issues of ethnicity, nationalism, and conflict management. Same as Anthropology 164P. **(VII-B)**

154G Conflict Management in Cross-Cultural Perspective (4). Examines theories of conflict management. Analyzes how conflict is mitigated in diverse cultures: at the interpersonal level, between groups, and on the international scale. Students discuss readings, hear from conflict management practitioners, and simulate negotiations. Same as Anthropology 136D. **(VII-B)**

155B Political/Social Impacts of Computing (4). Aims to increase our understanding of the major impacts of computer and telecommunications technologies on contemporary society. Emphasis on the uses and effects of these technologies on the political world, as well as other effects on society that are policy-relevant. Analytic research paper required. Prerequisite: consent of instructor.

155C Organizations (4). How bureaucracies, formal organizations, and voluntary associations work, how and why they grow, and where they are going. History and structure of organizational rationality; dynamics of organized groups; behavior in organizations. The limits of bureaucratization and attempts to overcome these limits through decentralization. Same as Sociology 141.

155E Revolution and Collective Political Violence (4). Examines the theory of collective political violence, internal war, and insurgency. Considers causes and "process" of revolutions; comparative characteristics of organized armed movements; personality of revolutionary leaders. U.S. foreign policy and military doctrine on insurgency and low-intensity conflict reviewed. Prerequisite: satisfaction of the lower-division writing requirement.

155F The Political Development of Japan (4). Surveys postwar development of Japan's politics and political economy and analyzes the political and institutional context of policy making in Japan, focusing on the roles played by state and societal actors. **(VII-B)**

155G Advanced Topics in Japanese Politics (4). Analysis of four current issues in Japanese politics: political reform, administrative reform and economic deregulation, foreign economic relations, and Japan's defense and security policies. **(VII-B)**

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. **(VII-B)**

156B Participation and Representation (4). Examines the concepts "political participation" and "political representation" and the interconnection between these concepts. Addresses both the theoretical issues and debates raised by these concepts and considers how they are studied empirically. Prerequisite: upper-division standing or consent of instructor.

156C Citizen Politics (4). Study of the role of public opinion in the political process. Reviews some of the key research approaches and findings on which our current understanding of public opinion is based, and provides an opportunity to conduct research and to analyze public opinion surveys. Prerequisite: satisfactory completion of the lower-division writing requirement.

156D Social Movements and Collective Behavior (4). A survey of models of collective action drawn from sociology, economics, psychology, and political science, and focusing on areas such as social movements, strikes, crowd psychology, cults, fads, fashions, public opinion, and symbolic and mythical elements in collective culture. Prerequisite: Political Science 6A, Sociology 1, or Economics 1. Same as Sociology 174.

157A Nationalism (4). Nationalism, one of the most potent social and political forces of the twentieth century, is explored. Seeks to understand the sources and nature of various forms of nationalism. Prerequisite: satisfactory completion of the lower-division writing requirement. **(VII-B)**

158A Political Corruption (4). Political corruption is universal. Examines how standards of corruption have changed over time in the United States, and how they vary from country to country. This seminar-style course emphasizes discussion of both ethical and practical issues relating to corruption. Prerequisite: satisfactory completion of the lower-division writing requirement.

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. **(VII-B)**

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. **(VII-B)**

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.

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.

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. Prerequisite: graduate standing or consent of instructor.

219A-Z Special Topics in Politics and Society (4). Current research in politics and society. May be repeated for credit as topics vary.

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.

220C Mass Media and Politics (4). The role of the mass media in shaping the political agenda and influencing political behavior. The primary focus is on the role of the media in election campaigns. Prerequisites: graduate standing and consent of instructor.

221A Public Policy (4). Explores different approaches to public policy analysis, the diverse conceptions of the goals and objectives that should be served by policy, and the appropriate role of the policy analyst. Policy consequences are traced to indirect and subtle incentives and disincentives. Prerequisite: graduate standing or consent of instructor. Same as Urban and Regional Planning U221.

224A Environmental Politics and Policy (4). Reviews and critiques literature on discussion topics including: the nature and effectiveness of the environmental movement and environmental policies; the role of science and technology; the use of economic incentives in policy; decentralization of decision making; and creating arenas for public involvement. Prerequisite: graduate standing or consent of instructor. Same as Urban and Regional Planning U224.

229 Advanced Research Methods (2). Topics in advanced research methods. Topics will vary. Prerequisite: graduate standing. May be repeated for credit as topics vary.

232B Electoral Systems Seminar (4). Studies electoral systems worldwide, analyzes their effect on the number of parties and duration of government cabinets, and applies the results to the present democratizing countries. Prerequisite: graduate standing or consent of instructor.

234A Research Methods in Political Science (4). An introduction to standard research techniques in political science. Issues of epistemology, research design, and approaches to empirical analysis. Prerequisites: graduate standing or consent of instructor, and upper-division or graduate-level statistics.

236A Wars, Democracy, and Fascism (4). Analyzes the important psychological legacies of wars in the later creation of political institutions. Prerequisite: graduate standing or consent of instructor.

238A How Government Began (4). Development of political institutions, from pre-human to Roman civilizations and beyond. Emphasizes actual practives, not "political thought," from 3000 B.C. to 1 A.D. Student presentations, however, can be on any time period. 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.

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.

243A Normative Approaches to International Politics (4). Departing from materialistic, utility-based foundations of traditional international relations, "constructivist" or "normative" approaches hold that interests and behavior take shape within social structures whose crucial elements are beliefs, scripts, and rules. Seminar critically assesses major works in the normative tradition. 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.

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.

252D Comparative Democratic Politics (4). Introduction to basic ideas in comparative politics and empirical democratic theory. The U.S. is used as a case study; its history, institutions, and policies are compared and contrasted with those of roughly 30 other major democracies, with particular interest in other large industrialized nations. Prerequisites: graduate standing and consent of instructor.

253A Political Culture (4). An introduction to the general study of political culture and the political cultures of selected societies, including Great Britain, Germany, Japan, Russia, China, India, and Mexico. Prerequisite: graduate standing or consent of instructor.

253B Regime Change in East Asia (4). Regime change from authoritarianism to democracies (Japan, South Korea, Taiwan); gradual political change (China). Uses theories from comparative literature on regime transition; combines theory with historical institutions, political culture, prior regimes, elements in the transition process in the four countries. Prerequisites: graduate standing or consent of instructor.

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. Prerequisite: graduate standing or consent of instructor.

285A Introduction to Political Psychology I (4). Reviews theoretical questions regarding the relationship between the analytical and normative and the polity. Considers the relationship between the analytical and normative concerns of psychology and political science, addressing empirical literatures including works on political socialization, ideology and public opinion, identity and nationality.

285B Introduction to Political Psychology II (4). Discusses the complex set of relationships among the three disciplines of politics, psychology, and economics, focusing on human decision-making processes and political choice. Prerequisite: graduate standing or consent of instructor. Formerly Political Science 262C.

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 group level. Using the knowledge and methods of all of the social sciences, a student majoring in Social Science develops the skills to think clearly about social concepts and issues. Social Science majors have an opportunity to use their classroom knowledge in applied and individual learning experiences, either in supervised off-campus settings or with a faculty mentor.

The core curriculum for Social Science majors provides exposure to various social science methods and topics, and teaches applied computing methodology. Students then select one of four specializations, which guides their upper-division course work. Those selecting Multicultural Studies, for example, examine how California's ethnic and cultural diversity affect the economics, politics, and culture of the State. The specialization in Public and Community Service provides students with internship experiences in community, public, and educational institutions. Students choosing Research and Analytical Methods learn more about the research and methodologies in at least two social science disciplines. The specialization in Social Studies helps to prepare students for teaching at the elementary or high school levels, and includes a State-certified subject matter program in social science.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See page 360.

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.

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 social, political, and economic issues arising from the multicultural environment found within societies in the United States and California.

Satisfaction of School requirements and 15 courses (60 units) as follows:

1. Four courses as specified in major requirement A above.
2. Two lower-division courses: Social Science 70A or Sociology 63, and one chosen from Anthropology 85, Social Science 61, 62, 63, 70B, 70C, 78A, 78B, 78C, or other lower-division courses in U.S. ethnic or gender studies.

3. Six upper-division courses as follows: two each from Asian American, African-American, and Chicano/Latino Studies (see the academic counselors for a list of approved courses in Chicano/Latino Studies).
4. Three additional upper-division courses from: Anthropology 134D, 136K, 138Q, 138S, 138T; Political Science 124A, 126A, 126C; Psychology 174A, 174B, 174E, 174F; Social Science 166, 167, 168, 170B, 170D, 170E, 170H, 171A, 172B, 172C, 172D, 172E, 173F-G, 173H, 173I, 173K-L, 175A, 175B, 176A, 178A, 178B, 178C, 178D, 178E; Sociology 161, 167A, 168.

NOTE: It is recommended that the upper-division writing requirement be satisfied by taking Sociology 167A.

Students are strongly encouraged to pursue a minor in either African-American Studies, Asian American Studies, Chicano/Latino Studies, or Native American Studies.

Specialization in Public and Community Service

Public and Community Service (PCS) is a program integrating academic learning with community and governmental activities. The specialization actively engages students in academic learning through civic participation. It offers students an opportunity to learn about public and community issues by working in designated community agencies and government organizations and to apply academic theories and analytical skills to the solution of real-world problems. Students engage in local communities as they develop programs addressing community needs. The required internship experiences include a responsibility at a community or government agency for a single or series of significant projects. Through these experiences, students become familiar with various social issues affecting society.

The goal of the program is to develop a better understanding of integrating academia and service in the community. Students identify and analyze socially significant needs addressed in the community in the context of one or more social science disciplines. The program broadens students' university experiences by exposing them to "the real world" and providing opportunities to conduct research on social issues. PCS students gain a more realistic perspective of society, greater self-knowledge, and increased leadership skills. The curriculum emphasizes urban contexts and multicultural issues, as well as historical, social, economic, and global perspectives. The faculty emphasizes relationships between educational theory and practice, providing students with the skills and knowledge needed to serve as educational leaders in community settings.

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, Political Science, Sociology) or in the Interdisciplinary Programs 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, and for which upper-division credit is earned, as specified in the internship guidelines available in the School of Social Sciences Undergraduate Counseling Office. Students must enroll in Social Science 194 to receive credit for this experience.
4. Three quarters of Social Science 193 (Field Studies in Public and Community Service). Students should see their academic advisor for more information.

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 31, 41, 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 121E, 131–139; Psychology 110–119; Social Science 100–101; Sociology 110–119.
4. Three additional upper-division courses as follows: one additional course from the above list (requirement 3); Social Science 170A; and one quarter research experience through Social Science 195 (Educational Policy Field Studies), or 199 (Independent Study) in any social science discipline.

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 teaching in elementary schools. Students wishing to teach social science at the high school level can enroll in the State-approved subject matter preparation program through this specialization. (Students *must* consult with a counselor to enroll in the subject matter preparation program.)

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, Political Science, 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 Political Science 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). Satisfactory completion of the Honors Thesis course also 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 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. Formerly Social Science 2A. **(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 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. Formerly Social Science 1A. **(III)**

3A Computer-Based Research in the Social Sciences (4) W. Focuses on the data manipulation, data visualization, and information searching techniques that are becoming increasingly popular and important as we move into the twenty-first century. Hands-on experience with mapping, graphics, and data arrays. Prerequisites: freshmen only or consent of instructor; school majors only.

9A General Statistics and Probability I (4) F. Introduction to the variety of statistical applications in many fields, including the humanities, physical and social sciences, business, forensic and health sciences. Descriptive statistics, including percentile ranks, standardization, and normal approximation. Estimation and the measurement of error. For non-Social Sciences majors only. Students who receive credit for Social Science 9A may not receive credit for Anthropology 10A, Economics 10A, Psychology 10A, Social Ecology 13, Social Science 10A, or Sociology 10A. **(V)**

9B General Statistics and Probability II (4) W. Introduction to statistical inference, sampling distributions, standard error. Hypothesis tests for proportions and means. Inferential techniques for nominal variables including chi-square. Selected applications in fields such as ecology, forensic science, and quantitative stylistics are based on student interests. For non-Social Sciences majors only. Prerequisite: Social Science 9A. Students who receive credit for Social Science 9B may not receive credit for Anthropology 10B, Economics 10B, Psychology 10B, Social Ecology 13, Social Science 10B, or Sociology 10B. **(V)**

9C General Statistics and Probability III (4) S. Focus on correlation and regression. One-way and two-way factorial analysis of variance. Introduction to repeated measures designs and non-parametric statistics. Critiquing the use of statistics in newspapers and popular magazines. Locating, accessing, and evaluating statistical data. For non-Social Sciences majors only. Prerequisite: Social Science 9B. Students who receive credit for Social Science 9C may not receive credit for Anthropology 10C, Economics 10C, Psychology 10C, Social Ecology 13, Social Science 10C, or Sociology 10C. **(V)**

10A Probability and Statistics in the Social Sciences I (4) F. Introduction to the variety of statistical applications in the social sciences. Descriptive statistics. Measures of central tendency and dispersion. Percentile ranks. Standardization and normal approximation. Basic probability theory focuses on application to statistical inference and binomial distribution. Laboratory required. Corequisite or prerequisite: Social Science 3A. Prerequisite: lower-division standing or consent of instructor. Students who receive credit for Social Science 10A may not receive credit for Anthropology 10A, Economics 10A, Psychology 10A, Social Ecology 13, Social Science 9A, or Sociology 10A. **(V)**

10B Probability and Statistics in the Social Sciences II (4) W. Introduction to statistical inference, sampling distribution, standard error. Hypothesis tests for proportions and means. Inferential techniques for nominal variables including chi-square, study measures of strengths, significance of relationships between variables, assumptions, data requirements, and types of error in significance tests. Prerequisite: Social Science 10A. Students who receive credit for Social Science 10B may not receive credit for Anthropology 10B, Economics 10B, Psychology 10B, Social Ecology 13, Social Science 9B, or Sociology 10B. **(V)**

10C Probability and Statistics in the Social Sciences III (4) S. Focus on correlation, regression, and control for effects of variables. One-way and two-way factorial analysis of variance. *A priori* and *a posteriori* comparisons. Introduction to repeated measures design and non-parametric statistics. Discuss use of statistics in newspapers and popular magazines. Prerequisite: Social Science 10B. Students who receive credit for Social Science 10C may not receive credit for Anthropology 10C, Economics 10C, Psychology 10C, Social Ecology 13, Social Science 9C, or Sociology 10C. **(V)**

11 Origins of Global Interdependence (4). Offers a general overview of the rise of global interdependence in political, economic, demographic, and cultural terms. Considers what drove people from relative isolation into intensified intercourse with one another, and investigates the consequences of this shift. **(VII-B)**

12 Global Issues and Institutions (4). Surveys recent developments in the nature of global interdependence. Examines the major political, economic, and military conflicts of this century and recent problems of population growth, environmental decay, ethnic/national antagonism and violence, and post-Cold War politics. **(VII-B)**

13 Global Economy (4). Acquaints students with the fundamental patterns and problems of the global economy. Emphasizes the historical roots and political implications of economic choices. **(VII-B)**

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.

61 Introduction to Chicano/Latino Studies I (4). Introduces links between culture, history, and sociology of Chicano/Latino communities. Examines the formation, evolution, and adaptation of Chicano/Latino communities within a national and international perspective. Reviews literature on Chicano/Latino Studies as a field of intellectual inquiry. **(III, VII-A)**

62 Introduction to Chicano/Latino Studies II (4). Foundations of Latinos from pre-history to present with emphasis on race, class, gender, and culture. Examines institutions/processes of: indigenous culture; conquests, colonialism/neocolonialism; racialization; capitalist industrialization; immigration; Americanization. History, literary and artistic materials/texts of Latino subgroups. **(III, VII-A)**

63 Introduction to Chicano/Latino Studies III (4). An introduction to Chicano/Latino Studies through inter- and intra-group comparisons of various Latino groups in the United States. Issues examined include immigration, political participation and protest, socioeconomic status, gender relations and sexuality, and ethnic and racial discrimination. **(III, VII-A)**

70A U.S. Ethnic and Racial Cultures (4). A survey of ethnic and racial groups 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 distinct demographic populations. **(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. **(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. **(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. **(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 Asian American Studies 60A and History 15C. **(III, 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 Asian American Studies 60B. **(III, 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. Same as Asian American Studies 60C. **(III, 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: Social Science 10A-B-C, Economics 10A-B and 30, or equivalent courses. 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 Science 100A or Social Ecology 166A. Corequisite: Social Science 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 Science 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 Science 10A-B-C, 100A-B-C, or consent of instructor. Same as Anthropology 172A-B.

H158A International Studies Honors Research Seminar (4). Designed to assist students prepare a thesis prospectus for the Honors Program in International Studies. The student identifies a thesis topic, reads on the subjects of writing and research methods, orally presents and defends the prospectus, and prepares a written prospectus/literature review. Prerequisite: acceptance into the International Studies Honors Program.

H158B International Studies Honors Thesis Research (4). In consultation with the faculty advisor, the student continues the research process and begins to provide draft chapters. Faculty advisor meets on a weekly/biweekly basis to discuss research problems, review/edit draft chapters, and monitor the established calendar for thesis completion. Prerequisite: Social Science H158A.

H158C International Studies Honors Thesis (4). Under the supervision of the faculty advisor, the student completes the final draft of the thesis and obtains the faculty advisor's signature approving the thesis. Prerequisites: Social Science H158B and satisfactory completion of the lower-division writing requirement.

166 Latino Social Movements and Organizations (4). An examination of social movement theories and organizational theories and research through an analysis of ways in which Latinos have organized to confront discrimination and secure full and fair participation in the labor market, education, politics, and other societal institutions.

167 Chicano/Chicana Labor History (4). Examines origins of Latino/Latina labor from colonial period to present. Emphasis on the issues of race, culture, class, and gender. Focus on processes and institutions including: encomienda, migration, unions, informal economies, Bracero program, domestic work. **(VII-A)**

168 Chicano/Latino Research Seminar (4). Taught as a writing and research seminar in Chicano/Latino Studies. Student develops own project; engages in peer editing; drafts, writes, and presents paper at spring research conference. Prior course work in Chicano/Latino Studies helpful, i.e., Social Science 61, 62, 63. Prerequisites: satisfactory completion of the lower-division writing requirement and upper-division standing. **(VII-A)**

170A Scope and Problems of Interdisciplinary Research (4). Takes an empirical approach to quantitative and qualitative research problems in psychology, sociology, political science, anthropology, ethnic studies. Examines how traditional research designs (experiment, survey, field observation) can be modified to address interdisciplinary questions. Explores other techniques: discipline-specific writing styles. Prerequisites: Social Science 10A-B-C or equivalent.

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. **(VII-A)**

170C Work, the Economy, and Culture (4). Studies the economic fabric of societies relative to cultural institutions and activities. Relationships between global economy and national and international culture. Selected writers utilized in discussing class, race, gender, labor, and cultural processes in worldwide system of production and consumption. **(VII-B)**

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.

170E Society and Culture (4). An introduction to the processes underlying stratification in American society with emphasis on race/ethic/class divisions. These processes also are examined in relationship to the works of major theorists such as Marx, Weber, and Durkheim. **(VII-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. **(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.

170H Religion and Culture (4). A survey of the major issues in the comparative study of religious beliefs and behavior of minority American cultures.

170P Philosophies and World Religions (4). A survey of the world's major philosophical traditions and religions and the ethical systems they have produced. The origins of these ethical systems and the fundamental principles upon which they are built. Examples: Kantian, Confucian, Judeo-Christian, and relativism. **(VII-B)**

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.

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. **(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.

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. **(VII-A)**

172C Asian-American Culture (4). A survey of socio-political-economic dimensions of Asian-American people: their past, present, and future. **(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. **(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. **(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 Science 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 Science 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.) **(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. **(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. **(VII-A)**

173J Chicano/Latino Experience: History, Society, and Culture in Autobiography (4). Examines how history, society, and culture are manifested in autobiography and studies how Chicano/Latino subjects have recorded their life experience before and during the twentieth century. **(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: precolonial 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 Science 173K. **(VII-A)**

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. **(VII-A)**

175B Ethnic and Racial Communities (4). Examines various theoretical analyses of race and ethnicity, particularly as they apply to Asian Americans. Also explores the relationship of Asian Americans to other racialized minorities in the U.S. Same as Asian American Studies 161. **(VII-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. **(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. Same as Asian American Studies 100B.

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. Same as Asian American Studies 162. **(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. Same as Asian American Studies 151C. **(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. Same as Asian American Studies 151D. **(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. Same as Asian American Studies 151E. **(VII-A)**

180 Advanced Topics in Social Science (4). Provides Social Science majors with information from the Multicultural Studies, Public and Community Service, Research and Analytical Methods, and Social Studies specializations and synthesizes lower-division work. Students choose one specialization to explore in more depth, creating a focus for upper-division work.

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.

183A Global Peace and Conflict Studies Forum (2). A faculty-student forum featuring lecturers from a variety of institutions with discussion issues related to global peace and conflict studies. Pass/Not Pass only. May be taken for credit four times. Same as Humanities 183A and Social Ecology 183A. Formerly Social Science 184E.

183B Senior Seminar in Conflict Resolution (4). Designed for seniors (juniors may also enroll) who are pursuing the minor in Conflict Resolution and/or International Studies major. Provides a forum in which students will refine skills and theory in the study of cooperation and conflict, from local to global arenas. Same as Humanities 183B and Social Ecology 183B. **(VII-B)**

183C Senior Seminar in Conflict Resolution (4). Continuation of Social Science 183B. Students write a senior research paper. Prerequisite: Social Science 183B and satisfactory completion of the lower-division writing requirement. Same as Humanities 183C and Social Ecology 183C.

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. Pass/Not Pass only. 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. Prerequisite: upper-division standing or consent of instructor. 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 Science 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 Science 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.

193A-B-C Field Studies in Public and Community Service (4-4-4). Introduction to the research, literature, and issues surrounding the topic of field studies in multicultural settings through service learning. Students are placed in nonprofit community agencies for two quarters and complete 200 hours of field studies. Prerequisites: satisfactory completion of the lower-division writing requirement and consent of instructor. Open only to Social Science majors specializing in Public and Community Service. Formerly Social Science 196A-B-C.

194 Internships in Public and Community Service (4). A community service activity for students to make positive contributions to underserved and marginalized communities. The goal is to provide valuable service while enhancing the student's understanding of community agencies and service programs, with a connection between theory and practice. Prerequisites: satisfactory completion of the lower-division writing requirement and consent of internship coordinator. Open only to Social Science majors specializing in Public and Community Service. May be taken for credit twice.

195A-B-C Educational Policy Field Studies (4-4-4) F, W, S. Students learn to integrate academic course work with experiential learning; to examine the effects of educational policy on urban and suburban schools; to discover the relationship between community service and personal academic interests; and to develop awareness about the challenges of public education.

196 Community Internship (2 to 4) F, W, S. Students apply classroom knowledge to projects in nonprofit agencies. Students work with faculty and graduate students to research and propose solutions to agency-posed questions. Students are required to intern for 50 hours (for 2 units) and 100 hours (for 4 units). Prerequisites: satisfactory completion of the lower-division writing requirement and consent of internship coordinator or faculty sponsor. May be taken for credit three times.

197 Professional Internship (2 to 4) F, W, S. Opportunities to apply classroom knowledge and skills to an internship experience in the private sector. Students are required to intern for 50 hours (for 2 units) and 100 hours (for 4 units). Pass/Not Pass only. Prerequisites: satisfactory completion of the lower-division writing requirement and consent of the internship coordinator or faculty sponsor. May be repeated for credit for a total of 8 units.

198 Group Independent Study (2 to 4) F, W, S. Students participate in independent study under a written contract with a supervising UCI instructor. Prerequisite: consent of instructor and department chair. May be repeated for credit for a total of 12 units.

199 Individual Study (2 to 4) F, W, S. Opportunities to do research and learn new skills outside the normal classroom environment. Students participate in planned research and study activities under a written contract with a supervising UCI instructor. Prerequisites: upper-division standing; consent of instructor and department chair. May be taken for credit for a total of 16 units. Students may enroll for only one 199 each quarter.

DEPARTMENT OF SOCIOLOGY

4215 Social Science Plaza B; (949) 824-7637
Judith Stepan-Norris, **Department Chair**

Undergraduate Program

Sociology studies societies and human groups. It examines social conflict and cooperation, and the organization of families, communities, workplaces, and nations. The program at UCI covers the breadth of the discipline while giving students opportunities to conduct independent research, to do an internship in the community, to participate in an Honors Program, and to take advantage of departmental opportunities in such areas as human services, diversity, international sociology, and business, economy, and society. All students take basic courses on social institutions, theory, and methods. Students then take more specialized courses such as Race and Ethnicity, Social Psychology, Sociology of Gender, or Chinese Society. Courses are enriched by ongoing faculty research on such topics as the work and family of immigrants to the U.S., economic change in Asia, the relation between women and men in different social classes and ethnic groups, and attitudes to sexual behavior.

In addition to developing students' ability to critically analyze and understand social patterns, the major is relevant to professional careers in high school teaching, social work, urban planning, law, business, public health, and government service. It also provides training for advanced graduate work in sociology.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–59.

School Requirements: See page 360.

Departmental Requirements for the Major

School requirements must be met and must include 12 courses (48 units) as specified below:

A. Sociology 1 and either 2 or 3.

B. One course in methods (Sociology 110) and one course in theory 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, 56, 62, 63, 135, 141, 144, 145, 156, 161, 164, 173, 174, 175B.

E. One additional upper-division Sociology course and one additional introductory course from another social science discipline.

Honors Program in Sociology

The Honors Program in Sociology is open to outstanding Sociology majors during their junior 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 to design and carry out these projects, to exchange ideas, and to help analyze each other's work (Sociology H188A and H188B; satisfies Sociology major requirement C: Honors students do *not* have to take Sociology 180A). In addition, Honors students are required to attend 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 (Sociology 110) 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, 56, 62, 63, 135, 141, 144, 145, 156, 161, 164, 173, 174, 175B.

Graduate Program

Participating Faculty

Frank Bean: International migration and U.S. migration, social demography, economic sociology, sociology of racial/ethnic groups
Francesca Cancian: Gender sociology of the family, caregiving
Philip Cohen: Social demography, stratification, race, class and gender
Michel Crozier: Organizational sociology, public administration
Hector Delgado: Race/ethnicity/minority relations, migration and immigration, Latino sociology
Linton Freeman: Network models of social structure
Matthew L. Huffman: Social stratification, gender and racial inequality in the workplace, research methods
John Liu: Race/ethnic/minority relations; economy and society
David S. Meyer: Social movements, public policy, war and peace, political sociology
Nancy Naples: Women in poverty, sexual abuse, women's community activism
Belinda Robnett: Social movements, race and ethnicity, gender
David A. Smith: Urbanization, comparative historical sociology, political sociology, world-system analysis
Judy Stepan-Norris: Sociology of work, political sociology, historical and comparative sociology, American society
John Torpey: Applied sociology/research evaluation, comparative/historical sociology, political sociology
Judy Treas: Population studies, sociology of aging, social stratification, sociology of family
Wang Feng: Demography, social change, economy and society

Affiliated Faculty

Mark Baldassare: Urban sociology, public opinion research
Robert H. I. Blanks: Systems neurobiology, medical outcomes assessment, complementary integrative medicine, health, wellness, quality of life assessment
Ken Chew: Social demography, urban sociology, family and life course studies
Kitty Calavita: Sociology of law, criminology, social deviance, immigration, and inequality
John Dombrink: Crime and criminal justice, deviance and social control
Valerie Jeness: Links between deviance and social control, gender, social change
Henry Pontell: Criminal justice, sociology of law, medical sociology
Tonya Schuster: Social psychology, medical sociology, wellness research

The Department of Sociology offers a program of study leading to a Ph.D. in Social Science with a concentration in Sociology and Social Relations. The focus on research in social inequality and comparative/international sociology reflects departmental faculty strengths. Particular emphases include gender, race/ethnicity, labor, social movements, family, migration, population, political economy, and states and global transformation. The program provides structured training in sociological theory, statistics, and qualitative and quantitative research methods. While the core of the program is sociological, it also includes an interdisciplinary component, incorporating links to anthropology, political science, history, criminology, and urban planning. Small entering cohorts ensure personalized attention for each student and provides them with greater access to professors, allowing for close mentorship relationships. Program faculty take diverse theoretical and methodological approaches to a variety of substantive issues, are committed to empirical research addressing central sociological issues, and are open to intellectual cross-pollination from cognate disciplines.

Graduate students have the opportunity to participate in a variety of interdisciplinary research units, including the Center for the Study of Democracy, the Program in Global Peace and Conflict Studies, and informal research groups in states studies, demography, and labor studies. The Sociology Department is closely linked to Women's Studies and various ethnic studies programs, such as Asian American Studies and Chicano/Latino Studies. Research and funding opportunities are also available through UC-wide programs like Pacific Rim Studies and the Humanities Research Institute located on the UCI campus.

ADMISSION

Students in the program come from diverse educational, ethnic, and social backgrounds, including a number from different countries and various regions of the United States. The deadline for applications to receive full funding consideration for fall admission is January 15. Students are admitted for winter and spring quarter only under exceptional circumstances. Admission is based on application materials and evidence of scholarly potential, including grade point average, GRE scores, statements of purpose, and letters of recommendation.

REQUIREMENTS

Students must enroll in a two-quarter proseminar and a course in research design. Students are also required to complete a two-quarter statistics sequence, one seminar each in classical and contemporary theory, an advanced sociological methodology course, five substantive sociology seminars, and three graduate courses in related disciplines. The elective courses in sociology and in related

fields are selected in consultation with the student's advisor in order to build competency in an area of research specialization. Course work prepares students to complete an independent research project, which is presented in oral and written form during the winter quarter of their second year. Students must pass a formal evaluation at the end of their second year involving assessment of course work and the second-year research project. Knowledge of one foreign language is required.

All required course work must be completed prior to advancement to candidacy. Students will normally advance to candidacy by the end of their third year. The advancement-to-candidacy examination is based on (1) a written field examination in a broad area of sociology (e.g., social stratification, gender, international development, political sociology, population studies) and (2) an oral defense of a dissertation research prospectus, contextualized in the appropriate literature and including a discussion of data collection and methods of analysis. In preparation, students usually take at least the required one quarter of the Dissertation Seminar course during the third year. After advancing to candidacy, students are expected to work in close consultation with their advisor and dissertation committee. Committee approval of a satisfactory dissertation follows a final oral defense of the document, which normally comes by the end of the sixth year.

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 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 International Sociology (4). Introduces international sociology by examining international social structures and processes. Attention to international migration to and from various countries around the world, and to theories and research about the determinants of international migration for both sending and receiving countries. **(III, VII-B)**

3 Introduction to Social Problems (4). Focuses on how institutional and organizational features of societies generate problems for people. Particular attention is directed at a set of problems related to political and economic inequality: poverty, racism, sexism, urban and population problems, the environment, the criminal justice system. **(III)**

METHODS

10A-B-C Probability and Statistics (4-4-4). An introduction to probability and statistics. Emphasis on a thorough understanding of the probabilistic basis of statistical inference. Emphasizes examples from sociology, anthropology, and related social science disciplines. Same as Anthropology 10A-B-C. Students who receive credit for Sociology 10A-B-C may not receive credit for Anthropology 10A-B-C, Economics 10A-B-C, Psychology 10A-B-C, Social Ecology 13, or Social Science 9A-B-C or 10A-B-C. **(V)**

19 Special Topics: Methods (4). Prerequisites vary. May be repeated for credit as topic varies.

THEORY

23 Understanding Social Facts (4). Focus on perspectives toward the question of what constitutes sociological knowledge and processes through which competent investigators have built sociological arguments from data. Examination of several types of research techniques. **(III)**

29 Special Topics: Theory (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL PSYCHOLOGY

31 Introduction to Social Psychology (4). Studies sociological contributions to theory and research in social psychology, with focus on the social influences on personality, attitudes, beliefs, and behavior; socialization, human groups, and social interaction. Same as Psychology 78A. **(III)**

39 Special Topics: Social Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL STRUCTURE

41 Small Group Behavior (4). Deals with models for understanding behavior in small groups, including coalition formation, socialization, group norms and decision rules, leadership, conformity, group structure, and communication processes.

43 Urban Sociology (4). The nature, causes, and consequences of urbanization are examined along with its changing scale and complexity, demographic and ecological city growth patterns, the quality of life in urban areas, processes of decision-making in cities, and the bearing of sociological investigation on public policy concerns in contemporary urban society.

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.

59 Special Topics: Social Institutions and Culture (4). Prerequisites vary. May be repeated for credit as topic varies.

AGE, GENDER, RACE, AND ETHNICITY

62 Marriage and Families (4). Sociological theories and research on marriage, kinship, intimacy, and divorce. Emphasis on comparing family patterns in different social classes, ethnic groups, and societies, and on relating family life to the economy and other social institutions. Topics include gender roles, child-rearing, historical change. **(III)**

63 Race and Ethnicity (4). Focuses on racial and ethnic relations in the United States and compares them with those found in other societies. Analyzes the conditions that favor either cooperation and integration or rivalry, tension, and conflict. Appraises strategies for reducing and resolving conflicts. **(VII-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

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 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.

112A Practicum in Sociology (4). Hands-on research course. Students work together to apply sociological skills to class projects. Application of sociological theories to practical tasks. Use of multiple data collection methodologies (e.g., surveys, interviews, observations). May be taken for credit twice as topics vary.

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.

115A Oral History Interviewing (4). Provides detailed instruction on the oral history method including developing oral history projects, selecting research subjects, constructing an interview schedule/guide, oral history interviewing, transcribing the tapes, analyzing and writing up the results. Prerequisite: consent of instructor.

118A Seminar in Research Applications (4). Student research groups work closely with instructor to develop and carry out research on selected sociological topic(s). Students apply the logic of sociological research to gain understanding of the social world. Prerequisite: consent of instructor.

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.

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.

129 Special Topics: Theory (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL PSYCHOLOGY

135 Social Psychology of Networks (4). Review of network methods used in small group and organizational research. Discussion of social psychological literature relevant to the network of study of cognitive social structure, exchange and communication, identity negotiation, and social control. Case study of network datasets exemplifies research issues. Same as Psychology 178N. Formerly Sociology 162R.

139 Special Topics: Social Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL STRUCTURE

141 Organizations (4). How bureaucracies, formal organizations, and voluntary associations work, how and why they grow, and where they are going. History and structure of organizational rationality; dynamics of organized groups; behavior in organizations. The limits of bureaucratization and attempts to overcome these limits through decentralization. Same as Political Science 155C.

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.

146 States and Societies (4). Examines, over an extended historical period, the forces that drove the state into being, its nature and distinctive forms, and its variable and contingent relations with that other modern creation, "society."

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 of scientific activity, the growth of scientific disciplines, communication in science, and cognitive organization are used to explore the relationship of science, scientific communities, and society. Provides an overview of the literature and the directions of new research in the field. Prerequisites: upper-division standing; satisfactory completion of the lower-division writing requirement.

154 Medical Sociology (4). Current problems in the United States health-care system and proposals for reform. Considers financial barriers to access, the problem of patient dumping, underinsurance affecting the middle class, prenatal and perinatal care, child services, preventative care and needs of the elderly, minorities, low-income people, and the undocumented. Prerequisite: upper-division standing.

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.

157A Sociology of Education (4). Focuses on education as a social institution and as an agent of socialization. Education from cross-national perspectives, the formal organization of education, education and the family, education and social stratification, and education as a vehicle for examining and solving social problems.

158A Work and Family Issues (4). Historical trends in the relation of two social institutions. Contemporary challenges facing businesses and families in the U.S. and abroad. Changing gender relations in home and workplace. Corporate policies and family adaptions to employment. Production of household goods and services. Prerequisite: upper-division standing.

158B Work and Employment Relations (4). Sociological and economic theories of labor markets. Workers' job search methods, recruitment strategies used by employers, and their consequences. Structural changes in the labor market and the employment relationship. Models of discrimination and introduction to employment discrimination law.

159 Special Topics: Social Institutions and Culture (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL INEQUALITY MODULE

161 Sociology of Gender (4). Explores the complex processes contributing to the social construction of gender and sexuality in the U.S. with particular attention to the intersection of gender, race, ethnicity, sexuality, and class; and evaluates how men and women are differentially constituted in the family, education, work, politics, media, and language. **(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). Concrete anthropological and sociological studies from across the world, including the United States, are compared to give perspectives on social status, power, economic differences, race, ethnicity, and gender. 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.

167A Racial and Ethnic Relations in the United States (4). Recent events both in the United States and in other parts of the world remind us of the continuing significance of race and ethnicity in our lives. The scholarly literature in the field of race and ethnicity is rich. Prerequisite: satisfactory completion of the lower-division writing requirement.

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 Comparative Societies: China (4). Chinese society from 1949 to present. Social change in the context of political control and ideological considerations. Focus on the power structure, political decision processes, and ideological legitimation, and interplay with the Chinese community and culture. **(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.

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.

179 Special Topics: Societies and Social Inequality (4). Prerequisites vary. May be repeated for credit as topic varies.

RESEARCH AND HONORS

NOTE: Students are reminded that each quarter of a sequential course (i.e., Sociology 180A-B, H188A-B) must be taken in order.

180A-B Sociology Majors Seminar (4-4). Students learn sociology by doing it. A modest-sized research project is planned and implemented by each student. Prerequisite: Sociology major or consent of instructor.

182 Sociology Issues Seminar (2). Drawing on experts from campus and community, explores various sociological questions, findings, approaches through lectures and discussion. Students select seminar topics, prepare opening remarks, lead discussion with faculty member, guest lecturer. May be taken for credit four times as topics vary.

185A Sociology Internship (4). Designed for Sociology majors who have a working knowledge of sociological methods and theory. Students secure a field placement with the help of the instructor and mutually agreed upon sponsor. The sponsor provides a field experience for the student.

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 (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

GRADUATE

202A Proseminar I in Sociology and Social Relations (2 to 4). Introduces first-year graduate students in Sociology and Social Relations to the current research interests of Sociology faculty, as well as to other aspects of graduate life at UCI and to the profession of sociology more generally. Prerequisites: graduate standing, consent of instructor.

202B Proseminar II in Sociology and Social Relations (4). Focus is on second-year research projects, design, development, data gathering, analysis, and preparing both oral and written presentations of the results. Students learn new analytic and writing skills, gain experience with the research process, and become socialized about professional standards, customs, and institutions. Prerequisites: graduate standing, consent of instructor.

202C Proseminar III in Sociology and Social Relations (4). Prepares students for oral and written presentations of second-year projects to the faculty. Conducted as a seminar organized around discussion and detailed feedback on ongoing student research projects, achieving polished work. Prerequisites: graduate standing, consent of instructor.

210A Classical Social Theory (4). Examines the development of classical sociological theory through the writings of Karl Marx, Emile Durkheim, Max Weber, Georg Simmel, and George Herbert Mead. Prerequisites: graduate standing; consent of instructor. Same as Social Science 253N.

210B Contemporary Social Theory (4). Familiarizes students with twentieth-century developments in social thought that have influenced sociological research, suggesting "what is living and what is dead" in the "classics" and offering an overview of the main outlines of recent sociological theorizing. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253R.

211A Feminist Theorizing in Social Sciences (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? Prerequisites: graduate standing, consent of instructor. Same as Social Science 253B.

219 Special Topics: Theory (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

220A Research Design (4). Data collection, organization, and analysis in ethnographic or quasi-experimental settings, including interviewing, participant-observation, behavior observation, and questionnaires. Research design issues include sampling, longitudinal research, and comparative research. Emphasis on the integration of qualitative and quantitative data. Prerequisites: graduate standing, consent of instructor. Same as Anthropology 223A and Social Science 255A.

221A-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 Science 255M-N and Anthropology 210A-B.

222A Comparative and Historical Methods (4). Topics include the logic of comparative and historical analysis techniques and the examination of exemplar works in representative problem areas. Prerequisites: graduate standing, consent of instructor. Same as Social Science 256M.

223A 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. Prerequisites: graduate standing, consent of instructor. Same as Social Science 255D.

223B Contemporary Ethnography (4). Designed to explore the theoretical underpinnings, methodological dilemmas, contemporary debates in ethnographic investigation. The goal is to provide a broad introduction to the theory and practice of ethnography and gain ethnographic research design and analysis of field data. Prerequisites: graduate standing, consent of instructor. Same as Social Science 255E.

224A 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. Prerequisites: graduate standing, consent of instructor. Same as Social Science 256K.

225A 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. Prerequisites: graduate standing, consent of instructor. Same as Anthropology 222A and Social Science 201G, 241C, and 256A.

226A Methods of Demographic Analysis (4) S. Introduces basic demographic methods used in social science and public health research. Topics include sources and limitations of demographic data; components of population growth; measures of nuptiality, fertility, mortality, and population mobility projection methods; and demographic models. Prerequisite: graduate standing or consent of instructor.

228A-B-C Dissertation Seminar (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. Prerequisites: graduate standing, consent of instructor. Same as Social Science 250X-Y-Z.

229 Special Topics: Methods (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

230A Race and Ethnicity (4). An examination of central questions and issues in the field of race and ethnicity through a critical analysis and discussion of the principal theoretical perspectives and paradigms that have framed much of the scholarship in the area. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253V.

232A 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. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253H.

239 Special Topics: Social Inequality (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

240A Social Movements (4). A survey of the field of Social Movements, oriented around critical themes in the major theoretical traditions and contemporary exemplars. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253J.

241A Political Sociology (4). Begins with an examination of the three major orientations to the State (Pluralist, Elitist, and Class). Next considers current topics in political sociology including the Welfare State, the New Deal, political behavior, social movements, participation, and democracy. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253I.

242A 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. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253P.

249 Special Topics: Political Sociology and Social Movements (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

250A 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. Prerequisites: graduate standing, consent of instructor. Same as Social Science 254B.

252A Global Urbanization (4). Examines the spread of cities worldwide in the twentieth century. What are the political and economic causes of this process? What are the social-cultural, political, economic effects? How is contemporary urbanization liked to global restructuring of other kinds? Prerequisites: graduate standing, consent of instructor. Same as Social Science 254J and Urban and Regional Planning U273.

259 Special Topics: Global Studies and Comparative Development (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

260A Family and Households (4). Families and households as a fundamental unit of social organization. Concepts and controversies. U.S. demographic trends and global changes in marriage, divorce, fertility, living arrangements. Housework and paid work. Gender and generational inequalities. How families reproduce stratification systems. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253S.

261A Age, Generations, and the Life Course (4). Age is a central organizing principle of individual lives, social institutions, and human populations. Considers how age is socially defined and how developmental transitions between ages (i.e., growing up and growing older) are accomplished. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253E.

262A Populations (4). Introduces the interrelationships between population and social organization. Considers measurement and explanation of historical and contemporary trends in birth rates, death rates, migration, and marriage and divorce. Case material is drawn primarily from the U.S. and other industrialized nations. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 253F and Environmental Analysis and Design E222.

263A Sex Research Practicum (4). Human sexual behavior as social behavior to be studied empirically. Focuses on sexual attitudes and behavior, with particular reference to topics such as early sexual experiences, gender, sexual disease transmission, social movements. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253T.

269 Special Topics: Social Demography (2 to 4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

272A Work and Industrial Relations (4). Explores the nature, causes, and results of workplace conflict in American Society. Considers topics such as "American Exceptionalism," sex segregation in the workplace, strikes and the role of unions in American society. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253U.

273A Social Structures (4). Alternative theoretical approaches and research strategies for examining topics such as stratification, modernization, and socialization. Reading includes Marx, Weber, Dahrendorf, Sahlinns, and Lenski. Prerequisite: graduate standing or consent of instructor. Same as Social Science 253O.

279 Special Topics: Social Organizations and Institutions (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

289 Special Topics (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

290 Dissertation Research (1 to 12). Prerequisites: graduate standing, consent of instructor. May be repeated for credit.

299 Independent Study (4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit.

GRADUATE PROGRAM IN SOCIAL SCIENCE

In addition to the departmental graduate programs, the School offers graduate programs leading to the M.A. in Social Science with a concentration in Demographic and Social Analysis and to the Ph.D. in Social Science with a concentration in Mathematical Behavioral Sciences. Each program is administered by a different group of faculty.

Graduate Concentration in Demographic and Social Analysis

Participating Faculty

Frank Bean: Migration and immigration, immigrants' welfare and demographic behavior
Marlon G. Boarnet: Urban economics, urban planning, urban economic development
Michael Burton: Economic anthropology, ecological anthropology, gender
Kitty C. Calavita: Sociology of law, criminology, social deviance, immigration, and inequality
Leo R. Chavez: International migration, Latin American immigrants, medical anthropology
Kenneth S. Chew: Social demography, urban sociology, family and life-course studies
Philip Cohen: Social demography, inequality, race, and work
C. David Dooley: Community psychology, epidemiology, economic change
Susan Greenhalgh: Political economy, feminism/gender, politics of reproduction, critical demography
Bernard N. Grofman: Mathematical models of collective decision making, formal democracy theory, politics of small groups
Matt L. Huffman: Organizations, work, gender inequality
Richard McCleary: Criminal justice, research methodology, statistics
Robert Newcomb: Social statistics, methodology
Gary Richardson: Economic history, immigration in historical perspective
Arthur J. Rubel: Medical anthropology, peasants studies
David A. Smith: Urban sociology, comparative sociology, political sociology
William C. Thompson: Psychology and law, criminal justice, human judgment and decision making
Judith Treas: Population studies, sociology of aging, sociology of family
Douglas L. White: Cross-cultural research, mathematical anthropology, social networks

The M.A. in Social Science with a concentration in Demographic and Social Analysis offers specialized training in the research skills to address practical problems confronting society, business, government, and the nonprofit sector. The concentration emphasizes the Pacific Rim and issues defining Southern California's population, such as immigration, changing household and family structure, racial and economic inequalities, and the impact of local and regional population growth. Informed by the interdisciplinary field of demography, the program draws on faculty and courses in the Schools of Social Sciences and Social Ecology.

ADMISSION

Students who wish to complete the program in one year are generally admitted to the program in the fall quarter. Students must hold a B.A. or B.S., normally in a social science or related field, and should have had at least four units of undergraduate statistics or equivalent mathematics courses. Students must meet the general admission requirements for graduate studies, which include official transcripts of all college course work, Graduate Record Examination scores for tests taken within the past five years, and three letters of recommendation. Applicants from non-English speaking countries must also take the Test of English as a Foreign Language (TOEFL) and achieve a score of 550 or higher on the paper-based test or 213 or higher on the computer-based test.

REQUIREMENTS

The M.A. requires 36 units of study and an oral exit examination. All students must complete 20 units of required courses which include one course in research design, one in demographic methods, one in populations, and two in statistics. In addition, students must complete 16 units of elective courses in population issues or research methods. No more than four units may be internship, independent study, directed readings, or thesis courses (to prepare for the oral examination). One or two electives may be upper-division undergraduate courses, with the remainder being graduate courses. All courses must be completed with a grade of B or better.

The M.A. in Social Science with a concentration in Demographic and Social Analysis may also be awarded to Ph.D. students who complete the necessary requirements.

Graduate Concentration in Mathematical Behavioral Sciences

Participating Faculty

Dennis J. Aigner: Applied econometrics, statistics, operations research
Aldo Antonelli: Non-standard set theories, logical foundations of game theory and applications to distributed artificial intelligence
Jeffrey Barrett: Philosophy of science, philosophy of physics
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
Charles F. Chubb: Visual perception, psychophysics
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
Rui J. P. de Figueiredo: Mathematical foundations of neural networks, contextual feedback models for automated image understanding
Arthur S. DeVany: Theory of markets, transportation, labor economics, industrial organizations
John E. DiNardo: Labor economics, development economics, applied economics
Barbara Dosher: Memory, information processing, perception
Michael D'Zmura: Vision research, Virtual Reality Laboratory
Jean-Claude Falmagne: Mathematical psychology
Stephen Franklin: Computer-based educational technology, computer graphics, teaching of programming
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
L. Robin Keller: Decision analysis, risk analysis, problem structuring, management science
Jaewoo Lee: Process and exchange rates, investment, economic fluctuations
R. Duncan Luce: Mathematical behavioral science
Penelope Maddy: Philosophy of mathematics, philosophy of logic
Louis Narens: Measurement, logic, and metacognition
Robert Newcomb: Statistical and research methods for the social sciences
Dale Poirier: Econometrics, both theoretical and empirical, specializing in Bayesian econometrics
A. Kimball Romney: Experimental and psychological anthropology
Stergios Skaperdas: Economic theory, political economy
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, Virtual Reality Laboratory
John I. Yellott: Mathematical psychology and vision perception

The concentration in Mathematical Behavioral Sciences offers a program of interdisciplinary and mathematical approaches to the study of human behavior, providing high levels of training in current mathematical modeling and in mathematics and software use and programming. The program is administered by an interdisciplinary group of faculty. Within the concentration, an emphasis in Social Networks is available; specific requirements are detailed below.

ADMISSION

Admission to the concentration in Mathematical Behavioral Sciences requires evidence of appreciable mathematical skill and knowledge. As an absolute minimum, a candidate should have taken one full year of calculus, including calculus of several variables, and one course in linear algebra, and should also provide evidence of additional mathematical depth. This depth can be manifested in a number of different ways including, but not restricted to, an undergraduate degree in mathematics or physical science, a high score on the mathematics portion of the GRE, or a strong undergraduate minor in mathematics. In addition, students should have some exposure to a behavioral science field. Especially useful is some experience with behavioral science modeling.

Those students interested in the emphasis in Social Networks should make this clear in their application. A student is free at any time after admission to move into or out of the emphasis in Social Networks, but will be subject to the requirements in effect at the time of original admission to the concentration in Mathematical Behavioral Sciences.

REQUIREMENTS

Four major classes of requirements must be fulfilled. Since a number of options are available, the student will, in consultation with an advisor, develop a plan of study.

Quantitative/Mathematical. To be completed by the end of the third year: (1) one course each in analysis beyond calculus (or discrete mathematics for the Social Networks emphasis), abstract algebra beyond linear algebra (or graph theory for the Social Networks emphasis), 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 with a substantial relevant technical literature or (2) demonstrate proficiency in computer programming considerably beyond that of the standard computer requirement. Because of the continually changing nature of computer languages and software, the conditions for fulfilling this additional computer expertise requirement is left to the judgment of the faculty subcommittee on computers of the Ph.D. program.

Substantive Minor. Students are expected to develop considerable expertise in some substantive field and in the application of models to it. This requires the completion of three courses at the upper-division or graduate level that do not necessarily entail extensive modeling, and three courses or seminars in which the primary thrust is mathematical modeling.

Research Papers and Colloquia. At the end of the second year, a 10–20-page paper reporting original research or a penetrating analysis of some subtopic of mathematical behavioral science (or social networks with a formal or mathematical component) is expected. An oral presentation will be given to faculty and graduate students. Two faculty members are assigned to read and evaluate the paper and talk.

Students are required to take for credit four quarters of the Mathematical Behavioral Sciences Colloquium, Social Science 211A-B-C, during their first three years. (Although not a formal requirement, students are expected to attend the Colloquium on a regular basis whenever in residence.) Students in the Social Networks emphasis are required to attend about 75 percent of these colloquia, including all that are designated as Social Networks colloquia. Social Networks students also must attend occasional colloquia, usually of local faculty and graduate students, which are separate from the general Mathematical Behavioral Sciences Colloquia.

Master of Arts Degree

The M.A. degree is awarded to UCI Ph.D. students who complete necessary requirements or to students currently enrolled in a Ph.D. program (or equivalent) at another institution who are directly admitted for graduate study leading only to the master's degree at UCI. Such applicants must provide evidence that their Ph.D. program agrees to this one-year arrangement. Requirements include the submission of a petition to the Graduate Committee along with a proposed plan of study consisting of 36 units of relevant Mathematical Behavioral Science courses, normally including the core requirement in mathematical statistics, and the satisfactory completion of a comprehensive examination.

Graduate Courses in Social Science

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 Science 100A-B-C or equivalent. Satisfactory/Unsatisfactory grading only. Same as Information and Computer Science 238A, 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 Science 201A. Same as Information and Computer Science 238B, 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 Science 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. Prerequisites: graduate standing; consent of instructor. Same as Anthropology 222A, Social Science 241C and 256A, and Sociology 225A.

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.

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.

211A-B-C Mathematical Behavioral Sciences Colloquium (2-2-2). Weekly reports and colloquia by faculty, students, and visitors. Satisfactory/Unsatisfactory only. May be repeated for credit.

221 Latino National Identity and Global Reach (4). Focuses on national identity and cultural hegemony expressed through popular music as it has developed historically in Spanish-speaking countries of the Caribbean and in transnational Latino communities in urban centers in the United States.

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.

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. Same as Anthropology 222C.

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. Same as Anthropology 222B.

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. Prerequisites: graduate standing; consent of instructor. Same as Anthropology 222A, Social Science 201G and 256A, and Sociology 225A.

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.

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.

SOCIOLOGY AND 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. Prerequisites: graduate standing, consent of instructor. Same as Sociology 228A-B-C.

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 Theorizing in Social Sciences (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? Prerequisites: graduate standing, consent of instructor. Same as Sociology 211A.

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. Prerequisites: graduate standing, consent of instructor. Same as Sociology 261A.

253F Populations (4). Introduces the interrelationships between population and social organization. Considers measurement and explanation of historical and contemporary trends in birth rates, death rates, migration, and marriage and divorce. Case material is drawn primarily from the U.S. and other industrialized nations. Prerequisites: graduate standing, consent of instructor. Same as Sociology 262A and Environmental Analysis and Design E222.

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. Prerequisites: graduate standing, consent of instructor. Same as Sociology 232A.

253I Political Sociology (4). Begins with an examination of the three major orientations to the State (Pluralist, Elitist, and Class). Next considers current topics in political sociology including the Welfare State, the New Deal, political behavior, social movements, participation, and democracy. Prerequisites: graduate standing, consent of instructor. Same as Sociology 241A.

253J Social Movements (4). A survey of the field of Social Movements, oriented around critical themes in the major theoretical traditions and contemporary exemplars. Prerequisites: graduate standing, consent of instructor. Same as Sociology 240A.

253N Classical Social Theory (4). Examines the development of classical sociological theory through the writings of Karl Marx, Emile Durkheim, Max Weber, Georg Simmel, and George Herbert Mead. Prerequisites: graduate standing; consent of instructor. Same as Sociology 210A.

253O Social Structures (4). Alternative theoretical approaches and research strategies for examining topics such as stratification, modernization, and socialization. Reading include Marx, Weber, Dahrendorf, Sahlinns, and Lenski. Prerequisites: graduate standing, consent of instructor. Same as Sociology 273A.

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. Prerequisites: graduate standing, consent of instructor. Same as Sociology 242A.

253Q Nations, States, and Gender (4). Explores the ways in which nations, nationalism, states, and citizenship are gendered relations and processes. Questions include: How do women construct themselves as political subjects, and how are constructions of citizenship and discourses of rights gendered? Prerequisite: graduate standing or consent of instructor. Same as Anthropology 246C.

253R Contemporary Social Theory (4). Familiarizes students with twentieth-century developments in social thought that have influenced sociological research, suggesting "what is living and what is dead" in the "classics" and offering an overview of the main outlines of recent sociological theorizing. Prerequisites: graduate standing, consent of instructor. Same as Sociology 210B.

253S Family and Households (4). Families and households as a fundamental unit of social organization. Concepts and controversies. U.S. demographic trends and global changes in marriage, divorce, fertility, living arrangements. Housework and paid work. Gender and generational inequalities. How families reproduce stratification systems. Prerequisites: graduate standing, consent of instructor. Same as Sociology 260A.

253T Sex Research Practicum (4). Human sexual behavior as social behavior to be studied empirically. Focuses on sexual attitudes and behavior, with particular reference to topics such as early sexual experiences, gender, sexual disease transmission, social movements. Prerequisites: graduate standing, consent of instructor. Same as Sociology 263A.

253U Work and Industrial Relations (4). Explores the nature, causes, and results of workplace conflict in American society. Considers topics such as "American Exceptionalism," sex segregation in the workplace, strikes and the role of unions in American society. Prerequisites: graduate standing, consent of instructor. Same as Sociology 272A.

253V Race and Ethnicity (4). An examination of central questions and issues in the field of race and ethnicity through a critical analysis and discussion of the principal theoretical perspectives and paradigms that have framed much of the scholarship in the area. Prerequisites: graduate standing, consent of instructor. Same as Sociology 230A.

THIRD WORLD DEVELOPMENT AND SOCIAL CHANGE

254A Transnational Migration (4). The immigrant experience will be examined in order to explore how specific theoretical issues are examined empirically. These issues include ethnic enclave formation, gendered differences in migration and settlement, class differences, the migration of indigenous groups, identity formation, and issues of representation. Same as Anthropology 235A.

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. Prerequisites: graduate standing, consent of instructor. Same as Sociology 250A.

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 process? What are the social-cultural, political, economic effects? How is contemporary urbanization linked to global restructuring of other kinds? Prerequisites: graduate standing, consent of instructor. Same as Sociology 252 and 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.

254L Approaches to Globalization (4). Historical and contemporary approaches to the world economy, emphasizing anthropological questions of culture, power, identity, inequality. Examines "neo-imperialism," "late capitalism," accumulation, global markets, urban space, the state, business and policy globalization discourse, "local" responses to and instantiations of the "global." Prerequisite: graduate standing or consent of instructor. Same as Anthropology 248A.

254M Law, Colonialism, and Nationalism (4). Origins and spread of law in colonial and nationalist contexts: law's role in constituting and policing difference. Recent theoretical approaches; property in things and people; human and indigenous rights; "customary" law; legal foundations of nationalism; resistance to/through law; globalization. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 246B.

254N Citizenship, Democracy, and Violence (4). Building on the discussion of works which formulate broader hypotheses about the relationship of culture and the control of violence, explores the dynamics of violence under democratic regimes in case studies either in Europe or in the Americas. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 248B.

METHODS AND STATISTICS

255A Research Design (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. Prerequisites: graduate standing; consent of instructor. Same as Anthropology 223A and Sociology 220A.

255C Grant and Proposal Writing (4). Focuses on production, critique, and revision of student research proposals. A practical seminar designed to improve student proposals, help students through the application processes, and increase students' chances of obtaining support for their research. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 225A.

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. Prerequisites: graduate standing, consent of instructor. Same as Sociology 223A.

255E Contemporary Ethnography (4). Designed to explore the theoretical underpinnings, methodological dilemmas, and contemporary debates in ethnographic investigation. The goal is to provide a broad introduction to the theory and practice of ethnography and gain ethnographic research design and analysis of field data. Prerequisites: graduate standing, consent of instructor. Same as Sociology 223B.

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 Sociology 221A-B and 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. Prerequisites: graduate standing; consent of instructor. Same as Anthropology 222A, Social Science 201G and 241C, and Sociology 225A.

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. Prerequisites: graduate standing, consent of instructor. Same as Sociology 224A.

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. Prerequisites: graduate standing, consent of instructor. Same as Sociology 222A.

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.

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.

272A Origin and Evolution of Marxist Social Thought (4). Focuses on the genesis and evolution of Marxist social thought. The "systemic" method of Marx and Engles to questions of economic production and reproduction is compared and contrasted with modern world-system grand visions, feminist-theoretic approaches, and postmodern critiques. Prerequisites: undergraduate course in political theory or equivalent: graduate standing or consent of instructor.

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.

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.

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.

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.

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.

275A-B-C Methods of Social Inquiry I, II, III (4-4-4). 275A: Focuses on qualitative methods including comparative historical research, participation observation, and interviewing techniques. **275B:** Concentrates on survey research techniques, including cross-cultural survey, sampling questionnaire construction and coding, and analysis of data. **275C:** Application of mathematical models to the analysis of the data. Required of all Comparative Culture graduate students emphasizing social inquiry. Prerequisite: graduate standing or consent of instructor.

276A-B-C Seminar in Expressive Forms of American Culture I, II, III (4-4-4). 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.

SPECIAL COURSES IN SOCIAL SCIENCE

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.

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Henry W. Pribram, M.B., B.S. Cambridge University (England), *Professor Emeritus of Radiological Sciences*
Michael D. Prislin, M.D. Georgetown University, *Professor of Clinical Family Medicine*
Glenn Provost, M.D. University of Southern California, *Assistant Clinical Professor of Anesthesiology*
Ralph E. Purdy, Ph.D. University of California, Los Angeles, *Professor of Pharmacology*
Chunyuan Qui, M.D. Henan Medical University (China), *Assistant Clinical Professor of Anesthesiology*
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*
Bouchab Rabbani, Ph.D. University of California, Irvine, *Professor Emeritus of Radiation Oncology*
Eric Radany, M.D., Ph.D. Stanford University, *Assistant Clinical Professor of Radiation Oncology*
Deepak Rajpoot, M.B., B.S. MGM Medical College (India), *Associate Clinical Professor of Pediatrics (Nephrology)*
Lily Ramirez-Boyd, M.D. University of Minnesota, *Assistant Clinical Professor of Obstetrics and Gynecology*
Nilam S. Ramsinghani, M.B., B.S. Grant Medical College, *Department Chair and Clinical Professor of Radiation Oncology*
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*
Varalakshmi Reddy, M.B., B.S. Osmania Medical College, *Assistant Clinical Professor of Pediatrics*
J. Leslie Redpath, Ph.D. University of Newcastle (England), *Professor of Radiation Oncology and of Community and Environmental Medicine*
Cheryl L. Reid, M.D. University of Oklahoma, *Associate Professor of Medicine (Cardiology) in Residence*
Andrew Reikes, M.D. University of California, San Diego, *Assistant Clinical Professor of Medicine (Internal Medicine/Primary Care)*
Christopher Reist, M.D. University of Virginia Medical School, *Associate Professor of Psychiatry and Human Behavior in Residence*
Peter M. Rentzepis, Ph.D. Cambridge University, *Professor of Chemistry and Ophthalmology, and UC Presidential Chair*
Charles E. Ribak, Ph.D. Boston University, *Professor of Anatomy and Neurobiology and of Biological Sciences*
John Ringman, M.D. McGill University (Canada), *Assistant Clinical Professor of Neurobiology*
Jorge Rivero, M.D. Case Western Reserve, *Assistant Clinical Professor of Family Medicine*
Dalia Rizkalla, M.D. Rush Medical School, *Assistant Clinical Professor of Anesthesiology*
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Leland Ronningen, M.D. University of the Health Sciences Uniformed Services, *Assistant Clinical Professor of Surgery (Urology)*
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 (Pulmonary/Critical Care)*
Arthur Rubel, Ph.D. University of North Carolina, *Professor Emeritus of Family Medicine*
Lloyd Rucker, M.D. University of Kentucky, *Clinical Professor of Medicine (General Internal Medicine and Primary Care)*
Boctor 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*
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José Y. Anguiano Sandoval, M.D. University of California, Los Angeles, *Clinical Professor of Family Medicine*
Rozanne M. Sandri-Goldin, Ph.D. The Johns Hopkins University, *Professor of Microbiology and Molecular Genetics and of Biological Sciences*
I. James Sarfeh, M.D. Albany Medical College, *Professor of Surgery (General)*
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, *Adjunct Professor of Psychiatry and Human Behavior*
Joseph Scherger, M.D. University of California, Los Angeles; M.P.H. University of Washington, *Associate Dean of Clinical Affairs and Department Chair and Professor of Clinical Family Medicine*
Peter L. Schnall, M.D. Stanford University, M.P.H. Columbia University, *Associate Clinical Professor of Medicine (Occupational/Preventative)*
Carl Schultz, M.D. University of California, Irvine, *Clinical Professor of Emergency Medicine*
Michele Schulz, M.D. University of Southern California, *Assistant Clinical Professor of Orthopaedic Surgery*
Jack L. Segal, M.D. Loyola University of Chicago, Stritch School of Medicine, *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*
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Ronald C. Shank, Ph.D. Massachusetts Institute of Technology, *Department Chair and Professor of Community and Environmental Medicine*
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Ronald A. Sherman, M.D. University of California, Los Angeles, *Assistant Professor of Medicine (Geriatrics) in Residence*
Maria E. Shier, M.D. Albany Medical College, *Assistant Clinical Professor of Anesthesiology*
Jack Shohet, M.D. University of Cincinnati, *Assistant Clinical Professor of Otolaryngology*
Cynthia H. Sholly, M.D. University of Utah, *Associate Clinical Professor of Pediatrics*

Jack Sills, M.D. Northwestern University, *Associate Clinical Professor of Pediatric Neonatology*
Anne Simoneau, M.D. Baylor College, *Assistant Clinical Professor of Surgery (Urology)*
Christopher Sims, M.D. Johns Hopkins University, *Assistant Adjunct Professor of Physiology and Biophysics*
Harry Skinner, M.D. University of South Carolina, Ph.D. University of California, Berkeley, *Chair and Professor of Orthopaedic Surgery and Professor of Mechanical and Aerospace Engineering*
Lewis M. Slater, M.D. University of Vermont Medical School, *Professor of Medicine (Hematology/Oncology) and Pathology*
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Martin A. Smith, Ph.D. Newcastle University (England), *Associate Professor of Anatomy and Neurobiology and of Biological Sciences*
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Kenneth N. Sokolski, M.D. University of California, Irvine, *Associate Adjunct Professor of Psychiatry and Human Behavior in Residence*
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Ihab Soliman, M.D. University of Alexandria, *Assistant Clinical Professor of Pediatrics*
Ivan Soltesz, Ph.D. L. Eötvös University (Hungary), *Associate Professor of Anatomy and Neurobiology and of Physiology and Biophysics*
Charles Sondhaus, Ph.D. University of California, Berkeley, *Professor Emeritus of Radiological Sciences*
Martha Sosa-Johnson, M.D. University of California, San Diego, *Assistant Clinical Professor of Medicine (General Internal and Primary Care)*
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 Emeritus of Pediatrics*
Lawrence D. Sporty, M.D. State University of New York, Downstate, *Senior Lecturer in Psychiatry and Human Behavior and in Neurology*
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Eric J. Stanbridge, Ph.D. Stanford University, *Professor of Microbiology and Molecular Genetics and of Neurobiology and Behavior*
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Robert E. Steele, Ph.D. Yale University, *Associate Professor of Biological Chemistry and Biological Sciences*
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*
Robin Steinberg-Epstein, M.D. University of California, Irvine, *Assistant Clinical Professor of Pediatrics*
Kenneth Steinhoff, M.D. Hahnemann University, *Associate Clinical Professor of Psychiatry and Human Behavior*
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Oswald Steward, Ph.D. University of California, Irvine, *Director of the Reeve-Irvine Research Center, Professor of Anatomy and Neurobiology, and of Neurobiology and Behavior, and Reeve-Irvine Chair in Spinal Cord Injury Research*
Jeffrey Suchard, M.D. University of California, Los Angeles, *Assistant Clinical Professor of Emergency Medicine*
Donald F. Summers, M.D. University of Illinois, *Professor Emeritus of Microbiology and Molecular Genetics*
James M. Swanson, Ph.D. The Ohio State University, *Professor of Pediatrics and of Psychiatry and Human Behavior in Residence*
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Sandor Szabo, M.D. University of Belgrade, Ph.D. University of Montreal, *Professor of Pathology and Pharmacology in Residence*
Ji Sze, Ph.D. Purdue University, *Assistant Professor of Anatomy and Neurobiology*
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Jamshid Tehranzadeh, M.D. Pahlavi University Medical School (Iran), *Professor of Radiological Sciences and Orthopaedic Surgery*
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Trung Thai, M.D. University of Illinois, *Assistant Clinical Professor of Psychiatry and Human Behavior*
Janis W. Thereault, M.D. University of Nebraska, *Associate Clinical Professor of Anesthesiology*
Charles Theuer, M.D. University of California, San Francisco, *Assistant Professor of Surgery*
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Paul E. Touchette, Ed.D. Harvard University, *Adjunct Professor of Pediatrics and of Psychiatry and Human Behavior*
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Bruce Tromberg, Ph.D. University of Tennessee, *Associate Professor of Surgery, Physiology and Biophysics, and Electrical and Computer Engineering in Residence*
Martin C. Tynan, M.B.B.C.H. Trinity College (Ireland), *Associate Clinical Professor of Orthopaedic Surgery*
Cherry Uy, M.D. Far Eastern University (Phillipines), *Assistant Clinical Professor of Pediatrics (Neonatology/Prenatal Medicine)*
Frederico E. Vaca, M.D. Creighton University, *Assistant Clinical Professor of Medicine (Emergency Medicine)*
Duane J. Vajgrt, M.D. University of California, San Francisco, *Assistant Clinical Professor of Radiological Sciences*
Stanley van den Noort, M.D. Harvard Medical School, *Professor Emeritus of Neurology*
Nosratolah D. Vaziri, M.D. Tehran University Medical School (Iran), *Chief of Nephrology and Professor of Medicine (Renal Diseases)*
Vasan Venugopalan, Sc.D. Massachusetts Institute of Technology, *Assistant Professor of Chemical and Biochemical Engineering and Materials Science and of Surgery (Laser Division)*
Halvor Vermund, M.D. University of Minnesota, *Professor Emeritus of Radiological Sciences*
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Luis P. Villarreal, Ph.D. University of California, San Diego, *Professor of Biological Sciences and Neurology*
Bruno Volk, M.D. University of Vienna, *Professor in Residence Emeritus of Pathology*
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 Emeritus of Medicine (Internal Medicine/Primary Care)*
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Nai-San Wang, Ph.D. McGill University, *Professor in Residence Emeritus of Pathology*
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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, *Associate Professor of Neurology, Anatomy and Neurobiology, and Neurobiology and Behavior*
Lari Wenzel, Ph.D. Arizona State University, *Assistant Adjunct Professor of Medicine (Epidemiology)*
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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 of Biological Sciences*
James L. Whittenberger, M.D. University of Chicago, *Professor Emeritus of Community and Environmental Medicine in Residence*
Tim Wigal, Ph.D. University of Texas, Austin, *Associate Adjunct Professor of Pediatrics*
Petra Wilder-Smith, Ph.D. Bern University (Switzerland); D.D.S. Guys Hospital (England), *Associate Adjunct Professor of Surgery*
James H. Williams, Jr., M.D. Harvard University, *Associate Adjunct Professor of Medicine (Pulmonary)*
Laura Williams, M.D. Tufts University; M.P.H. Rutgers University, *Assistant Clinical Professor of Family Medicine*
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, and John E. Connolly Chair in Surgery*
Robert L. Winer, M.D. Case Western Reserve University, *Adjunct Professor of Medicine (Nephrology/Renal)*
Roy Winston, M.D. Mt. Sinai School of Medicine, New York University, *Associate Clinical Professor of Anesthesiology*
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Brian Wong, M.D. Johns Hopkins University, *Assistant Professor of Otolaryngology in Residence*
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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)*
Peter Wong, M.D. Tufts University, *Assistant Clinical Professor of Radiological Sciences*
Kenneth Wright, M.D. Boston University School of Medicine, *Professor of Clinical Ophthalmology*
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Sing-Yung Wu, M.D. The Johns Hopkins University, Ph.D. University of Washington, *Professor of Radiological Sciences and Medicine in Residence*
Frederic Wyle, M.D. University of Pennsylvania, *Professor Emeritus of Medicine (Infectious Diseases) in Residence*
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Robert R. Young, M.D. Harvard University, *Vice Chair and Professor Emeritus 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*
Roginelli O. Yu, M.D. University of California, Davis, *Assistant Clinical Professor of Family Medicine*
Qun-Yong Zhou, Ph.D. Oregon Health Sciences University, *Assistant Professor of Pharmacology*
Angyrios Ziogas, Ph.D. University of Southern California, *Assistant Adjunct Professor of Medicine (Epidemiology)*

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, graduate academic students, practicing physicians and other health care professionals. Educational programs are offered along the continuum of medical education with programs in undergraduate, graduate, and continuing medical education. These programs emphasize the most current knowledge in the health sciences and reflect the changing practice of medicine. Further, the College of Medicine's educational programs are designed to stimulate life-long 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.

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, including, the Dr. S. Jerome and Judith D. Tamkin Student Lecture Hall, 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 Louis A. and Helen C. Gottschalk 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 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.

WILLIAM J. GILLESPIE NEUROSCIENCE RESEARCH FACILITY

The William J. Gillespie Neuroscience Research Facility is the home of a core group of prominent scientists who integrate basic and clinical neuroscience as they seek the causes and cures for neurological diseases and neuropsychiatric disorders including Alzheimer's disease, autism, depression, epilepsy, Parkinson's disease, schizophrenia, spinal chord injury, and stroke. This facility is the first of five planned buildings in the Irvine Biomedical Research Center (IBRC) slated to be built on the UCI campus over the next two decades. IBRC is a landmark public-private collaboration between UCI and businesses involved in biomedical, biotechnological, and health care services. The center will enable UCI researchers and participating companies to work alongside one another, combining basic science, clinical study, and product development to find new approaches to the diagnosis and treatment of disease.

CHAO FAMILY COMPREHENSIVE CANCER CENTER

The Chao Family Comprehensive Cancer Center is the only National Cancer Institute-designated facility in Orange County and one of only 57 such centers in the country. Overall, more than 100 faculty members at the Cancer Center are involved in seven major research programs including everything from basic research that looks at how cancer cells grow to bone marrow transplantation to stem-cell therapy, a new way of harvesting marrow. The 56,000-square-foot facility provides an ideal setting for the practice of all the basic and clinical subspecialities involved in adult and pediatric oncology, including the application of the latest techniques for diagnosis and management of patients with cancer.

J. EDWARD BERK/ALUMNI MEDICAL EDUCATION CENTER

The College of Medicine recently opened a Student Training Center in the J. Edward Berk/Alumni Medical Education Building. Offering state-of-the-art training, the center was developed to teach and assess the clinical skills of medical students, residents, M.D.s, and other health care professionals in an environment that simulates an actual clinical setting. Participants are monitored and videotaped to evaluate their clinical performance related to obtaining a medical history, conducting an appropriate physical examination, and developing treatment management plans. All clinical practice examinations (CPX) and other clinical assessments are also done here.

The Student Training Center is a 2,850-square-foot high-tech facility which incorporates the latest and best innovations in interactive medical instructional technology, as well as eight clinical examination rooms with video cameras, a video monitor control station, a clinical skills laboratory, faculty development conference areas, a computer learning laboratory, interactive learning technology including "HARVEY" and UMedic, a student lounge, and a separate waiting area for actual and standardized patients.

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. Service 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.

UCI Medical Center also has cardiac, pediatric, neonatal, respiratory, burn medical-surgery, and neurosciences intensive care units and more than 90 specialty outpatient clinics. It is the designated countywide Level I trauma center.

UCI FAMILY HEALTH CENTER–SANTA ANA

The UCI Family Health Center–Santa Ana is a state-of-the-art primary care facility, conveniently located near the Santa Ana Civic Center. The Center has two missions—health care delivery and medical education.

As a community clinic, the Family Health Center's multilingual physicians and staff are committed to providing quality healthcare to patients, including the medically underserved. It provides primary care services to people of all ages including family medicine, preventive care for children and adults, and specialty care in pediatrics and OB/GYN.

As an integral part of the UCI College of Medicine, the Family Health Center provides educational and training opportunities for medical and nurse practitioner students, including the UCI Family Medicine and Obstetrics and Gynecology residency training programs.

UCI FAMILY HEALTH CENTER–ANAHEIM

The UCI Family Health Center–Anaheim provides care for more than 20,000 outpatient visits annually and training programs for resident physicians in primary care, general internal medicine, and general and adolescent pediatrics. There are additional programs in gynecology, dermatology, general surgery, podiatry, neurology, ophthalmology, optometry, orthopedics, psychiatry, and multispecialty faculty practice. The Center provides training for medical students in their primary care, general pediatric, adolescent medicine, and geriatric medicine rotations and electives.

AFFILIATED HOSPITALS AND CLINICS

Additional major teaching and research programs of the College of Medicine are conducted at the Long Beach Veterans Affairs Medical Center (LBVAMC) 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), Presbyterian (Newport Beach), Fountain Valley Hospital and Medical Center, Children's Hospital of Orange County, and the Orange County Health Care Agency/Public Health Clinic.

College of Medicine Alumni Relations

Maureen Hausen, Director (949) 824-7155

The UCI College of Medicine is an outgrowth of what began in 1896 as the Pacific College of Osteopathy (PSO). Some years later PSO became the College of Osteopathic Physicians and Surgeons, which then became the California College of Medicine in 1962 and subsequently became part of the UC system in 1965. The Office of Alumni Relations provides programs and services for nearly 4,000 alumni of the College as well as for students. From financial support to Honor's Night awards, mentorships to reunions, the Office of Alumni Relations seeks to provide a cornerstone from which students and alumni can benefit from their relationships to one another and in so doing, strengthen the College of Medicine.

THE M.D. PROGRAM

Admission and Outreach

All inquiries regarding admission programs and procedures of the UCI College of Medicine should be directed to:

University of California, Irvine
College of Medicine
Office of Admissions and Outreach
P.O. Box 4089
Irvine, CA 92697-4089

Telephone: (949) 824-5388, (800) UCI-5388; World Wide Web: http://www.ucihs.uci.edu/meded/.

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 (AMCAS)
Association of American Medical Colleges
Section for Student Services
2501 M Street, N.W., Lobby 26
Washington, D.C. 20037-1300

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 3,800 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 its 40-member Admissions Committee composed of basic science and clinical faculty, and medical students. 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, 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 alternate 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 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.)	12	18
One quarter of college level calculus	2.7	4
One semester/two quarters of biochemistry (Can be taken in combination with molecular biology or genetics.)	3	8

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 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 2001–02 entering class must have taken the MCAT no earlier than April 1998 and no later than August 2000. 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 includes basic science advisors and career specialty advisors.

Basic Science Advisors

Leslie Thompson, Ph.D., Chair (949) 824-4610

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 interventive 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.

Career Specialty Advisors

Michael Prislin, M.D., Chair (949) 824-4610
Associate Dean Student 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 to students as career-choice consultants.

Peer Review and Peer Counseling Program

Michael Prislin, M.D., Chair (949) 824-4610
Associate Dean Student 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.

Medical Scholars Program

Geraldine Codd (949) 824-3415
Academic Skills Coordinator

The Medical Scholars Program (MSP), a student-driven effort, is an innovative, collegial study support program which was implemented in the fall of 1993. This program benefits all students in the College of Medicine and provides a special sense of community for first-year students. A great deal of the informal knowledge concerning medical school is communicated through the components of MSP. Small groups of first-year students are led by second-year co-leaders who develop clinically relevant case-based problems for discussion covering material learned in first-year basic science courses. Fourth-year students serve as co-leaders for similar groups of second-year students. First-year discussion groups meet every other week, and groups for second-year students meet once per month. First- and second-year students also receive MSP study packets, which contain test questions and answers from the previous year, and are distributed prior to each examination.

Another component of MSP is designed to meet the needs of students as they face the challenges and transitions of their third year. During their various clerkships, third-year students are assisted in four basic areas by fourth-year students: oral examinations, presentation of cases, written examinations, and clinical skills. These fourth-year students not only share their knowledge of the subjects, but also share information about appropriate study material, and what to emphasize in studying for their various test experiences. Both third- and fourth-year students benefit from participating in this program.

Medical Scientist Training Program (M.D./Ph.D.)

Alan Goldin, M.D., Ph.D., Chair (949) 824-5264

Exceptionally well-qualified students interested in careers in academic medicine and with demonstrated research accomplishments may be considered for admission to the Medical Scientist Training Program (MSTP). Students in this program pursue a combined curriculum leading to an M.D. degree from the College of Medicine and a Ph.D. degree from any of the graduate programs at UCI. The program requires a minimum of seven years for completion, and students holding either degree are not eligible for MSTP. Additional information is available from the MSTP Coordinator's Office, (949) 824-5264.

Applicants must submit a supplementary application (available from the College of Medicine Office of Admissions) to the Medical Scientist Training Program when they are submitting their secondary application information to the College of Medicine. Students accepted into the program have the option of pursuing graduate study in any of the graduate programs at UCI. Although a specific graduate department need not be chosen at the time of admission, students are expected to have selected a field for their graduate studies. Financial support in the form of a fellowship, which includes a stipend as well as tuition and fees, is provided to a limited number of students each year. Applicants not accepted into MSTP may be considered separately for admission to the College of Medicine.

M.D./M.B.A. Joint Degree Program

Maria Chandler, M.D./M.B.A. Faculty Advisor (949) 824-5388

The joint M.D./M.B.A. program requires five years for completion. It is aimed at individuals who are exceptional in ability and motivation and who seek a career as physicians with major responsibility for administration and management in health care organizations and institutions. Students in this program pursue a combined curriculum leading to an M.D. degree from the College of Medicine and an M.B.A. degree from the Graduate School of Management.

Students must be currently enrolled in the M.D. program in order to apply to the combined M.D./M.B.A. program. During their second or third year of medical school, interested students submit an application to the Graduate School of Management Admissions Committee, after review by the College of Medicine. Final acceptance to the program is granted by the Graduate School of Management, and M.B.A. course work begins following completion of the student's third year of medical school. Students should be aware that enrollment in the M.D. program does not guarantee acceptance into the M.B.A. program.

The MCAT, along with the completion of three years of medical school training in good standing and passage of USMLE Step 1, currently serve as a waiver for the GMAT entrance examination usually required for application to the M.B.A. program. The total number of units required to graduate for each program separately are satisfied in the M.D./M.B.A. joint program.

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 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 break which is typically used in preparation for the USMLE Step 1 Examination. In the third year there are flexible time periods that may be used for the completion of core or elective requirements. In the fourth year, schedules allow ample opportunity to explore various curriculum areas.

Under the recommendation of faculty supported committees, UCI's M.D. program continues to undergo 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, medical economics, communication, decision making, cultural competence, domestic violence, and many others.

Horizontal integration of the course material has been achieved through the development of multidisciplinary courses including the Patient-Doctor series, Neurosciences, and clinical correlates. The second-year course directors have coordinated the instruction of materials among Pathology, Clinical Pathology, Pharmacology, and Patient-Doctor II. In addition, the first-year course directors have just completed a cooperative project of integrating the courses within the first-year curriculum.

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. Students must pass both Step 1 and 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 Educational Affairs and is distributed along with other policy statements to all students.

The College uses an Honors/Pass/Fail grading system for all students who entered after 1994.

Curricular Description

FIRST-YEAR CURRICULUM

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)*

Medical Biochemistry

Biological chemistry for first-year medical and graduate students. The course presents the metabolism and molecular biology relevant to human health and disease that form the foundation of medical science for the next century. This course provides students with a fundamental understanding of the principles of biology and its relationship to the problems of the human body. A clinical correlate is held each week. In addition, students meet weekly in seminar groups and give a presentation on a topic of interest. *(Medicine 504)*

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 Neurosciences course. The first part of the course focuses on the structure and function of the central and peripheral nervous systems as studied at the cellular level. The second component addresses 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. Aspects of assessment of genetic risk, screening for genetic diseases, and cytogenetic and biochemical diagnosis are presented. Utilization of the human gene map and of DNA sequence information for molecular genetic diagnosis are discussed. Students are introduced to the use of genetic databases and bioinformatics. Approaches to treatment of genetic diseases are presented, and legal, ethical, and social aspects of diagnosis and management of genetic disease are discussed. Prerequisite: Biochemistry. *(Medicine 511)*

Patient-Doctor Practice I

The Patient-Doctor I (PDI) course is the first in a series of clinical courses focusing on professional role development. It is the prerequisite for PDII, III, and IV. The patient-doctor relationship is at the core of medical practice, guided by principles of medical ethics. PDI has four separate sections—Medical Interviewing, Behavioral Science, Medical Informatics, and Clinical Procedures and Skills—and they run concurrently. *(Medicine 501A-B-C)*

Introduction to Medical Physiology

This course consists of lectures and clinical correlates covering the classical concepts of vertebrate physiology, with emphasis on the function of normal tissues in humans. Specific topics related to neurophysiology, cardiovascular, respiratory, renal, gastrointestinal, endocrine, exercise, and sexual physiology are presented. Prerequisite: Biochemistry. Corequisite: Neurosciences. *(Medicine 506A-B)*

Molecular Cell Biology

The molecular and cellular mechanisms responsible for cell division DNA, RNA, and protein biosynthesis are emphasized. The future of molecular medicine including recombinant DNA technology is a major focus. This course provides students with an understanding of the fundamental principles of molecular cell biology, along with an understanding of the application of morphological and molecular relationships to problems of the human body. A clinical correlate is held each week. In addition, students meet weekly in seminar groups and give a presentation on a topic of interest. *(Medicine 506)*

Medical 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	Second Year
Gross Anatomy and Embryology	Clinical Pathology
Medical Biochemistry	Topics in Medicine
Histology	Pathology
Neurosciences	Pharmacology
Physiology/ Pathophysiology	Patient-Doctor II
Medical Genetics	Medical Microbiology
Patient-Doctor I	
Molecular Cell Biology	
Immunology	

Third- and Fourth-Year Requirements[1]

Inpatient Medicine	Radiology
Ambulatory Medicine	Intensive Care Unit
Surgery	Emergency Medicine
Obstetrics/Gynecology	Musculoskeletal and Rehabilitation
Pediatrics	Substance Abuse
Psychiatry	Advanced Patient-Doctor
Family Medicine[2]	Electives[4]
Senior Subinternship[3]	
Neuroscience	

[1] The sequence of third and fourth years varies.
[2] One-half day per week.
[3] Prerequisite: Inpatient and Ambulatory Medicine.
[4] Two-week surgical elective required.

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)*

Topics in Medicine

A case approach is used to integrate basic science concepts, pathology, pharmacology, and physical diagnosis as they pertain to an introduction to clinical medicine. Prerequisites: first-year curriculum; second-year curriculum to quarter six. *(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 covers all the various classes of drugs that are used in medicine, particularly those used in specific or symptomatic treatment of disease states. Drugs of abuse are also covered. Emphasis is on the mechanisms of action of drugs at the organ or system level and on their use in medicine. The course includes lectures that illustrate pharmacologic principles, supplemented by small group problem-solving sessions. Prerequisites: Biochemistry and Physiology. *(Medicine 517A-B)*

Patient-Doctor II

Patient-Doctor II (PDII) is a year-long multidisciplinary course that integrates a number of content areas affecting the patient-doctor relationship and the practice of medicine. The course focuses on helping students acquire skills in physician-patient communication, physical examination and diagnosis, and communicating findings both in writing and orally. Students work together in small groups to interview and examine standardized patients, to pursue independent learning objectives derived from clinical cases, and to discuss how their experiences apply to their future practice. Prerequisite: first-year curriculum. *(Medicine 519A-B-C)*

THIRD- AND FOURTH-YEAR CURRICULUM

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. Required third-year rotation. *(Medicine 524)*

General Surgery 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 surgical histories and conducting physical examinations. Emphasis is placed on the clinical evaluation, pathogenesis, diagnosis, and treatment of surgical diseases. Students spend six weeks on general surgery (three weeks each at UCI and LBVA Medical Centers). Required third-year rotation. *(Medicine 526)*

Inpatient and Ambulatory Medicine Clerkship

The clerkship occurs in a highly structured clinical environment in both in-patient and ambulatory settings. Students gradually assume responsibility for the care of patients, thereby enhancing their clinical, diagnostic, and procedural skills. Clinical vignettes, bedside teaching, and standardized patients serve to round out the experience. Required third-year rotations. *(Medicine 527A, 527B)*

Pediatrics Clerkship

The pediatrics clerkship serves as an introduction to general pediatrics. Students rotate on the pediatric ward, pediatric ambulatory settings, and the newborn nursery. Subspecialty clinics, community, and adolescent medicine experiences also are included. During the clerkship, students refine their knowledge and skills in obtaining accurate historical data, performing physical examinations with pediatric patients, and developing appropriate diagnosis and management plans. The clerkship also stresses the relationship of the health of infants, children, and adolescents with regard to the integrity of the family unit. Required third-year rotations. *(Medicine 528)*

Psychiatry Clerkship

This six-week clinical clerkship provides an opportunity for hands-on experience in the process of recognizing, diagnosing, and treating mental illness using the latest neuropharmacological advances in brain research as well as more traditional psychotherapeutic approaches. Each student participates fully in patient care, clinical teaching, and conferences. There are several choices of clinical settings for the rotation, including adult in-patient psychiatry, consultation psychiatry, geriatrics, and a variety of ambulatory experiences. 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. Required third-year rotations. *(Medicine 529)*

Family Medicine Clerkship

This unique clerkship matches students with a family 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 family medicine and 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. Required third-year rotation. *(Medicine 597A-B-C-D-E)*

Substance Abuse Core

This two-week course provides an opportunity to directly observe and learn the principles of substance abuse treatment. Students also attend therapeutic groups, 12-step meetings, and family intervention sessions, as well as didactic sessions and small group discussions. Sites include the Betty Ford Center, Hoag Hospital, and the LBVA Medical Center. *(Medicine 670A)*

ICU Core Clerkship

This is a four-week rotation offered at UCI, LBVA, and Long Beach Memorial. ICU is offered in medicine, surgery, and pediatrics. Students function as subinterns, becoming integral members of the ICU team, and serve as primary caregivers under supervision. Course goals and objectives are: (a) to instruct students on the principles and management of critically ill and injured patients and on the perioperative and postoperative recovery in patients undergoing major surgical procedures; (b) to allow students the opportunity to encounter and evaluate patients with multisystem organ dysfunction and postsurgical complications; and (c) to become familiar with the clinical management of shock, respiratory failure, and sepsis and to be able to assess and develop a rational therapeutic plan for the critically ill patient.

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; topics in medicine 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 clinical competence and to prepare the students for the challenges and demands of the internship. Students may choose between subinternships in medicine, surgery, or pediatrics. *(Medicine 536, 537, 538, or 539)*

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, and focus on practical aspects of outpatient care of common disorders.

Emergency Medicine

The objectives of this course are to introduce students to principles of acute care medicine. Students have the opportunity to evaluate patients and formulate effective testing and treatment strategies. Active participation in patient care and procedural skills are emphasized. The course consists of experiences in patient care, assigned readings from emergency medicine references, weekly conferences, and an end-of-rotation final. *(Medicine 630D)*

Advanced Patient-Doctor

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

Depending upon their particular interests, needs, and goals, students may take a variety of elective courses consisting of at least 30 contact-hours per week during the third and fourth years. Electives must be approved by the clinical faculty advisor and the department chair. Students may take up to 20 weeks of their fourth-year course work (core/electives) at institutions other than UCI.

A listing of elective courses and descriptions can be found on the World Wide Web at http://www.com.uci.edu/meded/Elective/index.htm.

All questions regarding the curriculum, electives, or matters of records should be directed to:

University of California, Irvine
College of Medicine
Office of Medical Education
P.O. Box 4089
Irvine, CA 92697-4089

General information/records: (949) 824-6138; electives: (714) 456-8462; curriculum: (949) 824-4609.

Office of Educational Affairs

Alberto Manetta, M.D., Senior Associate Dean (949) 824-5798

The Senior Associate Dean for Educational Affairs, in cooperation with the Academic Senate faculty, has responsibility for administrative oversight of the educational program leading to the M.D. degree, the postgraduate residency programs, and continuing medical education programs provided for practicing physicians and allied health personnel. The Senior Associate Dean also has administrative oversight responsibility for the Office of Admissions and Outreach. The Medical Education division provides services for the M.D. program which include curriculum development, implementation, management, and evaluation. The Student Affairs division provides student support services which include academic advisement, learning skills counseling, psychological counseling, career counseling, and student records, and coordinates additional services offered through general University offices which include housing, student health, and disabled student services.

Student Affairs

Michael Prislin, M.D., Associate Dean (949) 824-4610
Marianne Ross, Ph.D., Counseling Psychologist (949) 824-4621
Geraldine Codd, Academic Skills Coordinator (949) 824-3415

One of the primary goals of the Associate Dean for Student Affairs 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 E. Purdy, Ph.D., Associate Dean (949) 824-5388
Peggy Harvey-Lee, Director (949) 824-4618
Outreach Counselor (949) 824-8930

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); serves as the focus for medical student organizations, coordinating their activities with the needs of the community; and is responsible for the administration of the Post-Baccalaureate Program which has two phases and is designed to assist students to increase their chance for admission into medical school. Phase I is a six-week summer component encompassing intensive MCAT preparation and Phase II is one academic year of advanced undergraduate, upper-division course work at UCI. For more information on these programs refer to the College of Medicine Support Programs section.

Financial Aid

James Miles, Director (949) 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; tracks documents needed to complete an application; reviews and evaluates information provided by applicants; awards financial aid programs; and conducts research to determine basic educational expense budgets. It also provides students with information on policies and procedures, cost of attendance, and eligibility criteria.

In providing counseling services, the office advises students, reviews their individual circumstances, and provides financial assistance within financial aid program guidelines. It presents financial aid workshops for prospective and enrolled students to enhance their knowledge about financial aid programs and the application process, provides debt management counseling, and conducts entrance and exit interviews.

Medical Education

Lloyd Rucker, M.D., Associate Dean, Curricular Affairs (714) 456-7539
Robin Kirchoff, Director, Medical Education (949) 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.

Medical Academic Computing Center

Claudiu Dan, Director (949) 824-1215

The Medical Academic Computing Center was established to facilitate student use of computers and to further educational objectives by providing medical instructional software which is integrated into the curriculum. The center also provides access to Internet resources and productivity applications, and is equipped with 45 computers (Macintosh and PCs), all networked locally and to the Internet. Students benefit by using the multimedia capabilities of the computers for anatomical visualization and self-evaluation, and the instructional software which is currently used in numerous courses, including Histology, Pathology, Genetics, and Anatomy. Students do much of their course write-ups in the center, where they have access to word processing programs and printers. Students also use the center to access their e-mail, the World Wide Web, and the many online medical information resources now available.

Continuing Medical Education

Gerald M. Roth, M.D., Assistant Dean, Continuing Medical Education (949) 824-6039
Elena Gilliam, Coordinator (949) 824-4220

The Office of Continuing Medical Education provides educational activities to physicians and other health care professionals that reinforce basic medical knowledge; impart updated information on clinical practice and health care delivery; introduce new ideas, skills, and technology; and disseminate pertinent research findings in order to improve the quality of the health care that is delivered by the participants.

Graduate Medical Education

Kirk A. Keegan, Jr., M.D. (714) 456-3526
Nancy Koehring, Director, Postgraduate Medical Education and Community Programs (714) 456-3526

The UCI College of Medicine Graduate Medical Education Training Programs attract medical students from prestigious medical schools nationwide. UCI offers 43 ACGME-approved residency and fellowship training programs. 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, and Rancho Los Amigos offer additional 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 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: Post-Baccalaureate Program, Premedical Conference, and workshops; Reapplicant Conference; support to medical student organizations; academic counseling, liaison with general campus support services, and recruitment workshops at other colleges and universities.

For additional information regarding these programs, contact the Office of Admissions and Outreach.

POSTGRADUATE EDUCATIONAL PROGRAMS

Residency Programs

The College of Medicine and its affiliated hospitals offer approximately 615 residency positions in almost all areas of medicine. Training levels range from first-year residencies through seventh-year-level subspecialty fellowships. Inquiries about specific programs should be directed to the Program Director as listed in the *Directory of Residency Training Programs,* published each year by the American Medical Association, or to the chair of the appropriate College of Medicine department.

All residency programs meet the formal standards of the Accreditation Council for Graduate Medical Education and the appropriate specialty boards. UCI adheres to the Health Professions Educational Assistance Act of 1976, P.L. 94-484, Section 709, regarding shared-schedule residency training positions.

Residents in all programs rotate to the UCI Medical Center at some time. Residents in anesthesiology, dermatology, diagnostic radiology, medicine, neurology, ophthalmology, pathology, surgery, physical medicine and rehabilitation, radiation oncology, family medicine subspecialties of medicine, orthopaedics, otolaryngology, urology, and psychiatry also rotate to the Long Beach Veterans Affairs Medical Center (LBVAMC). Residents in medicine, medicine subspecialities, anesthesiology, radiation oncology, psychiatry, obstetrics and gynecology, ophthalmology, pathology, pediatrics, physical medicine and rehabilitation, diagnostic radiology, and surgery 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 LBVAMC and UCI Medical Center, with a one-month rotation at Children's Hospital of Los Angeles, a month of cardiac anesthesia and a month of obstetric anesthesia at Cedars-Sinai Medical Center (Los Angeles), and a month of neuro anesthesia at UCLA. 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 Department of Dermatology offers a three-year accredited residency which has nine residents: three first-year, three second-year, and three third-year. It is a combined program between UCI Medical Center and Long Beach Veterans Administration Medical Center and is directed by Gary Cole, M.D., Chief of Dermatology Services at LBVAMC. First-year residents are stationed at LBVAMC; second-year residents spend four months in the Dermatopathology Laboratory at UCI Medical Center, four months on the ward there, and four months in research. Third-year residents rotate the Chief Resident position at UCI Medical Center and LBVAMC. They spend four months in a private practice environment at UCI, Kaiser, and Med Partners HMO programs. Additional participation includes the UCI Student Health Service, private practice offices of faculty, and the Beckman Laser Clinic.

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, treating over 40,000 patients annually. Ten board-certified emergency medicine faculty provide 24-hour patient care and supervision of residents and medical students. The Division of Emergency Medicine is active in public affairs, community service, and research in the areas of prehospital care, instructional methods, health policy, critical care technology, and infectious disease, among others.

FAMILY MEDICINE

The mission of the Family Medicine Residency Program is to train family physicians to succeed in a contemporary practice environment and to deliver high-quality medical care to a culturally and socioeconomically diverse patient population.

INTERNAL MEDICINE

The Internal Medicine Residency Program has two tracks: the traditional categorical track, which is a broad-based primary care-oriented training program, and a one-year preliminary track. Within the traditional program there is a special research pathway which encompasses two or three years of internal medicine and two years of research. Residents spend their time at the UCI Medical Center and LBVAMC. They may also rotate to Memorial Medical Center, a private hospital in Long Beach. The traditional program presents a comprehensive, three-year curriculum in general medicine. 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 diseases, nephrology, pulmonary/critical care diseases, and rheumatology.

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 six resident positions available each year in this four-year training program.

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 post-graduate 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 subspecialities, 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.

ORTHOPAEDIC SURGERY

The Department of Orthopaedic Surgery Residency Program is a four-year training program which follows an internship year in the Department of Surgery. The program is designed to provide exposure and experience in all areas of orthopaedics including trauma, reconstructive and joint replacement surgeries, pediatric orthopaedics, spine surgery, sports medicine, foot surgery, and rehabilitation. It is structured for maximum resident participation and minimizes private hospital rotations. The program's teaching hospitals include UCI Medical Center, LBVAMC, Children's Hospital of Orange County, Rancho Los Amigos Hospital in Downey, and Kaiser Permanente Medical Center in Anaheim. There are four resident positions available each year.

OTOLARYNGOLOGY—HEAD AND NECK SURGERY

The Department of Otolaryngology—Head and Neck Surgery offers a 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, LBVAMC, and 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 LBVAMC. 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 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, LBVAMC, and Long Beach Memorial Medical Center, 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 22 residents training for certification in diagnostic radiology. The program is based at the UCI Medical Center and integrated with LBVAMC, 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 encouraged 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 rotations at three participating hospitals: UCI Medical Center, LBVAMC, and MHMC.

SURGERY

The philosophy underlying all aspects of surgical training is that surgery is best learned, taught, and practiced as applied clinical physiology. Operative techniques and applied anatomy receive appropriate attention. Major portions of clinical experience, teaching, conferences, research, and patient care are oriented toward understanding and correcting disordered human biology. The surgical specialty involves more years of training than other medical disciplines due to the breadth of diseases and complexity of pathophysiology involved in surgery. The Department offers residencies in general surgery, plastic surgery, and urology.

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 Departments of Community and Environmental Medicine, Radiological Sciences, and 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:

University of California, Irvine
Office of Research and Graduate Studies
120 Administration Building
Irvine, CA 92697-3175
(949) 824-7295

Anatomy and Neurobiology

364 Medical Surge II; (949) 824-6050
E-mail: anatomy@uci.edu
World Wide Web: http://www.com.uci.edu/~anatomy/
Richard T. Robertson, **Department Chair**

Faculty

Tallie Z. Baram: Developmental neurobiology of seizures; CNS mechanisms of stress response
Xiaoning Bi: Cellular mechanisms of brain aging
Robert H. Blanks: Vestibular physiology and anatomy
Ralph A. Bradshaw: Growth factor action; signal transduction; protein processing
Anne L. 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; neurotropic factors
Roland A. Giolli: Experimental neuroanatomy; visual system
Herbert P. Killackey: Developmental neuroanatomy; somatosensory system
Leonard M. Kitzes: Auditory system physiology and development
Frances M. Leslie: Effects of drugs of abuse on central nervous system development
W. Ian Lipkin: Molecular/cellular biology of neurotropic viruses; Borna disease virus; animal models for neuropsychiatric diseases
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
Oswald Steward: Mechanisms of recovery from CSN injury
John E. Swett (Emeritus): Peripheral nervous system, spinal cord, pain mechanisms
Ji Sze: Molecular neurobiology; gene expression in *C. Elegans*
John H. Weiss: Mechanisms of neural degeneration

Research programs in the Department of Anatomy and Neurobiology focus on the neurosciences. Faculty interests range across the broad field of neuroscience research, including cellular and molecular neurobiology, mechanisms of development, ion channel physiology, experimental neuroanatomy, structure and function of sensory and motor systems, and response to injury and regeneration. The Department maintains facilities for electron microscopy, laser confocal microscopy, and computer-based imaging and informatics. Students performing graduate work in the Department are encouraged to become proficient in multiple areas of neuroscience using interdisciplinary techniques.

The Department offers graduate training in neuroscience under the auspices of the School of Biological Sciences in the Neurobiology track of the combined program in Molecular Biology, Genetics, and Biochemistry (MBG&B). The program leads to the Ph.D. degree in Biological Sciences. In concert with several other departments, a combined neuroscience core curriculum has been developed which includes course offerings in systems neurobiology, neurophysiology, and cellular, molecular, and developmental neurobiology. These courses may be taken as complete or partial fulfillment of the elective requirements of the MBG&B program. Students wishing to enter the Department's graduate program are encouraged to include some or all of these courses during their first and second years in the combined program.

Students admitted into the MBG&B program who subsequently select a focus in the Neurobiology track and 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 departmental seminars and participate in the Department's Journal Club. The dissertation research topic is chosen by the student in consultation with the research advisor. The majority of the third and fourth years are devoted to research. By the end of the third year, students take their advancement-to-candidacy examination by presenting and defending a proposal for specific dissertation research. Students are expected to graduate within five years of entering the program.

Course descriptions may be found in the School of Biological Sciences section.

Biological Chemistry

Building D, Room 240, Medical Sciences I; (949) 824-6051
Suzanne B. Sandmeyer, **Department Chair**

Faculty

Stuart M. Arfin: Gene regulation in *E. coli*
Pierre Baldi: Computation biology, bioinformatics, probabilistic modeling, machine learning
William Byerley: Genetics of schizophrenia
Xing Dai: Role of regulatory OVO proteins in mouse epidermal and reproductive differentiation
Deborah L. Grady: Mapping and sequence analysis of the human genome
Chris L. Greer: RNA processing and nuclear export; tRNA gene expression
Harry T. Haigler: Structure, function, and topography of annexin calcium binding proteins on membranes
Jack W. Jacobs: Cloning, expression, and characterization of leech anticoagulant proteins
Murray Korc: Molecular biology of altered signaling pathways in cancer
John Krolewski: Signal transduction and cellular growth control
Haoping Liu: Signal transduction, cell cycle regulation, hypha development in yeast
Calvin S. McLaughlin: Functional genomic analysis
Frank Meyskens: Biology of melanoma and chemoprevention of human cancer
Robert K. Moyzis: Human genome and complex genetic disease
Masayasu Nomura: RNA polymerase I; nucleolus and ribosome synthesis; nuclear structure and function
Suzanne B. Sandmeyer: Retrovirus-like elements in yeast; genomewide gene expression during stress
Robert E. Steele: Evolution of intercellular signaling in multicellular animals
Leslie M. Thompson: Molecular/biochemical analysis of skeletal dysplasias and Huntington's disease
Larry E. Vickery: Molecular chaperones and protein folding; assembly of Fels proteins
Ping H. Wang: Molecular actions of Insulin-like growth factor I (IGFI) in cardiac muscle; complications of diabetes
Kyoko Yokomori: Molecular mechanisms of chromosome dynamics and gene regulation

Faculty research interests in the Department of Biological Chemistry focus on the structure and function of chromosomes, signal transduction and its role in cell growth control, regulation of gene expression (transcription, RNA splicing, protein synthesis, and protein localization), and the molecular basis of development. Genome sequencing projects are making it possible for faculty to

exploit information learned about gene function in model organisms for understanding human disease processes. Students are exposed to technical expertise in all facets of current research in molecular biochemistry from protein chemistry to genetic engineering and gene mapping. Currently, researchers in the Department are using new DNA array technology to examine changes in gene expression in response to the environment.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in 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 thesis research in the second year. Students are required to attend and participate in the departmental research seminar 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.

Environmental Toxicology

370 Medical Surge II; (949) 824-8642
Ronald C. Shank, **Department Chair**

Faculty

Dean B. Baker: Environmental medicine and clinical toxicology; epidemiology; clinical effects of heavy metals, pesticides, and hazardous waste

Stephen C. Bondy: Neurotoxicology; biochemical changes in membranes resulting from toxic exposures

Byung H. (Ben) Choi: Mechanisms in chemical pathology; toxicology of heavy metals in the central nervous system

Derek Dunn-Rankin: Laser and optical diagnotics in practical systems, optical particle sizing; droplet formation and vaporization in high-pressure environments

Jonathon E. Ericson: Distribution of social ecology (environmental health science; archaeological chemistry), sources and extent of environmental lead exposure leading to prevention and diagnosis of childhood lead poisoning

Steven C. George: Nitric oxide effects on physiological systems; air pollutants

Yutaka Kikkawa: Pulmonary free radical biology; cytochrone 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

Charles E. Lambert: Toxicology of chemicals in the workplace; industry and regulatory toxicology; risk assessment, risk management, and risk communication

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

Kathryn E. Osann: Cancer epidemiology; biostatistics

Robert F. Phalen: Biophysics, aerosol science, and inhalation toxicology; toxicity of mixtures of particles and gases, lung defenses, and particle deposition in airways.

J. Leslie Redpath: Studies on the chemical and physical modification of radiation damage aimed at basic research in carcinogenesis

Boctor Said: DNA modification by successive exposure to multiple carcinogens; gene cloning to produce a protein to serve as a biomarker for cervial 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, phototoxicity, 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 biology and chemistry.

Undergraduate preparation of applicants should include six quarter units in general biology, zoology, bacteriology, or anatomy; 12 quarter units in mathematics, including calculus through vector analysis and differential equations; 12 quarter units of chemistry, including four quarter units of organic chemistry; 12 quarter units of physics, including optics; and four quarter units in molecular biology or biochemistry. Outstanding applicants who lack one or two of these prerequisites may be given an opportunity to take the required course(s) either before admission or during the first year in the graduate program; in such circumstances, none of these undergraduate courses may be used to satisfy the program elective or core course requirements. Upper-division or graduate science courses may be considered as substitutes for the above prerequisites by the Admissions Committee.

The graduate core curriculum for the Ph.D. degree includes Environmental Toxicology 201, 206A-B, 207, 298A-B-C, and 16 units from an approved elective pool. This pool consists of Environmental Toxicology 202, 204, 212, 220, 230; Physiology 206A-B; Anatomy 203A-B; Molecular Biology and Biochemistry 203, 204; and Developmental and Cell Biology 231B. Ph.D. students must also fulfill comprehensive examination, qualifying examination, teaching, and research dissertation requirements.

Requirements for the M.S. degree may be satisfied in one of two ways: Under Plan I, students complete the core program (Environmental Toxicology 201, 206A-B, 207, 298A-B, 299A-B-C, and eight units from the approved elective pool) with an average grade of B or better, and, under the direction of a faculty advisor, prepare a thesis that is acceptable to the thesis committee. Under Plan II, students complete the core program (Environmental Toxicology 201, 206A-B, 207, 290A-B-C, 298A-B-C, and eight units from the approved elective pool) with an average grade of B or better, prepare a scholarly paper based on individual study in an area of toxicology under the supervision of a faculty member, and satisfactorily pass the written comprehensive examination.

Opportunities for individual training and independent research experience exist in inhalation and pulmonary toxicology, atmospheric chemistry and aerosol science, chemical carcinogenesis, neurochemistry, biochemical toxicology, toxicology of naturally occurring compounds, chemical pathology, environmental microbiology, and environmental chemistry.

Research grants and contracts are available to support qualified students as research assistants.

GRADUATE COURSES IN ENVIRONMENTAL TOXICOLOGY

201 Principles of Toxicology (4) F. Problem solving to demonstrate principles of toxicology; quantitative dose-response relationship; toxicant-target (receptor) interaction emphasizing interspecies differences in Ah receptor and dioxins; complete *in vivo* metabolism of xenobiotics by mammalian systems; integration of organ responses to toxic agents.

202 Environmental Toxicology (4) W. 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.

206A-B Target Organ Toxicity (6-6) F, W. Analysis of responses occurring in twelve organ systems of humans exposed to environmental chemicals at toxic levels; distinctive cellular and tissue structure and physiological function; toxicological responses discussed in terms of phenomena, mechanisms of action, and methods of study. (Kleinman, Said)

207 Experimental Design and Interpretation of Toxicology Studies (2) F. 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.

208 Experimental Molecular Toxicology (4) S. Experimental techniques in mutagenesis research including detection of DNA damage and repair in DNA fragments and genes, in microbial and mammalian systems, and in transgenic mice. Methods for screening and sequence analysis of mutations generated by genotoxins.

212 Inhalation Toxicology (4) S, odd years. The principles and practice of laboratory inhalation toxicology. Topics include aerosols, gases, respiratory tract structure and function, lung defenses, aerosol deposition exposure techniques, characterization of exposure atmospheres, experimental designs, animal models, and regulations and guidelines.

220 Industrial Toxicology (4) F. Analysis of responsibilities toxicologists have in industry, including product safety, generating material safety data sheets, animal testing, ecotoxicological testing, risk/hazard communication, and assisting industrial hygienists and occupational physicians; emphasis on interdisciplinary nature of industrial toxicology and communication skills. Prerequisite: Environmental Toxicology 206A-B.

230 Chemical Mutagenesis and Carcinogenesis (4) F. Molecular mechanisms in carcinogenesis; structure-activity relationships; DNA repair; multistage 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.

290 Independent Study in Environmental Toxicology (4) F, W, S. With consent from a faculty member who will supervise the program, a student may receive credit for individual study in some area of toxicology, culminating in the completion of a scholarly paper on the subject. May be repeated for credit as the topics vary.

297 Advanced Topics in Occupational Toxicology (2) F, W, S. Discussions with clinical and research faculty in environmental toxicology and occupational medicine on current toxicology problems in the workplace and critical review of current publications in the field. Journal club/seminar format.

298A-B-C Environmental Toxicology Seminar (2) F, W, S. Presentation and discussion of current research problems and issues by students, postdoctoral fellows, faculty, and guests, covering the broad research and policy areas of environmental toxicology. Satisfactory/Unsatisfactory only. 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 2, Third Floor, UCI Medical Center; (714) 456-5789
Ann P. Walker, **Graduate Program Director**

Faculty

Maureen Bocian: Heterogeneity and variability in genetic syndromes; characterization of new syndromes; neurofibromatosis; skeletal dysplasias
John Jay Gargus: Genetic metabolic diseases; molecular genetics of cell membrane disorders
Moyra Smith: Development and chromosomal assignment of DNA probes for human genes; linkage and gene mapping in neurogenetic disorders including autism; DNA mutation analysis and genotype-phenotype correlation in tuberous sclerosis
M. Anne Spence: Population and quantitative genetics; linkage and mapping
Kathryn Steinhaus French: Prenatal genetic diagnosis
Ann P. Walker: Genetic counseling in hereditary cancer and late-onset diseases; genetics education; genetic service delivery; ethical, cultural, and public policy issues in genetics

The Division of Human Genetics and Birth Defects in the College of Medicine's Department of Pediatrics offers graduate education leading to the Master of Science degree in Genetic Counseling. Most graduates of the program join academic or hospital-based genetics teams engaged in providing clinical services, teaching, and research. Others work for local, state, or federal genetics programs, for commercial genetics laboratories, or in education. The graduate program is fully accredited by the American Board of Genetic Counseling.

Division faculty and staff are involved in teaching, research, and patient service. Clinical activities center on diagnostic evaluation, management, and genetic counseling for genetic disorders, birth defects, and developmentally disabling conditions. Faculty research interests include: gene mapping and linkage analysis using molecular or quantitative methods; characterization of malformation and chromosomal syndromes; late-onset genetic conditions—including familial cancers; factors in the etiology of chromosome abnormalities and congenital malformations; the cytogenetics of unusual sexual differentiation and cancers; psychosocial and cultural issues arising in genetic diseases, prenatal

diagnosis, and genetic testing for late-onset genetic diseases; delivery of genetics services; and ethical and public policy issues in genetics.

During the six to eight academic quarters of the program, students complete a sequence of core courses covering medical, quantitative, biochemical, molecular, and cancer genetics; cytogenetics; counseling theory; 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 satellite facilities, in the prenatal diagnosis program, in the cytogenetics and molecular genetics laboratories, and in various community agencies. Student participation in these and other divisional and departmental professional and educational activities such as lectures, seminars, journal club, Pediatrics and Obstetrics Grand Rounds, cytogenetics conferences, and various research, counseling, and patient management conferences is expected throughout the program.

Degree requirements include a minimum of 75 quarter units, completion of a research thesis that should be publishable, and demonstration of appropriate professional skills in genetic counseling. The program director serves as faculty advisor to students, but teaching and supervision of professional experiential training are shared by all Division faculty and staff, who frequently review student progress. In the second year, development of professional skills can be individualized according to the trainee's needs and interests. Successful completion of the program fulfills the curricular and clinical training requirements for eligibility to apply for examination by the American Board of Genetic Counseling.

Recommended undergraduate preparation includes course work in the biological and behavioral sciences—particularly in genetics, biochemistry or molecular biology, psychology, and human development. Course work in statistics is desirable. Fluency in Spanish or a Southeast Asian language confers a considerable advantage. Extracurricular or employment experiences that provide evidence of the student's maturity, interpersonal skills, and promise as a genetic counselor figure prominently in the admissions decision. References should speak to these qualities as well as to the academic qualifications of the applicant. GRE General Test scores must be submitted and Subject Test scores in any area will be considered if they are available. Since there is no GRE code for the Department of Pediatrics, applicants should have official scores sent to the Graduate Division.

Applications are accepted for the fall quarter only and must be complete by February 1. Because of keen competition for places in the program, a two-stage admissions process is employed. Following initial review of applications by the faculty admissions committee, approximately one-fifth of applicants are invited for interviews. These are usually conducted during March and April. If invited, it is greatly to the candidate's advantage to have an on-site interview, although in difficult circumstances it may be possible to arrange an out-of-town interview with a program graduate or a traveling faculty member. Any candidate planning to be in the Southern California area is encouraged to inquire in advance regarding the likelihood of an interview. Final selection from the interviewed candidates occurs in late April or early May. Four or five students are usually admitted each year.

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 and nontraditional 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 (even years). Lecture, three hours. Aspects of biochemistry and metabolism are reviewed with special emphasis on genetic abnormalities which lead to inborn errors of metabolism. Diagnostic procedures, heterozygote detection, treatment, counseling issues, and prenatal diagnosis are reviewed. Prerequisite: 200A or consent of instructor.

200E Molecular Genetics (4) W (even 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) S. Lecture, one and a half hours. 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.

200G Hereditary Cancer Counseling (4) W (odd years). Elements of genetic counseling for hereditary cancer. Cancer biology: genetic mechanisms and environmental influences in carcinogenesis; tumor pathology; cancer epidemiology and gene mapping. Diagnosis, prevention, surveillance and treatment for inherited cancers. Psychosocial, ethical, and legal aspects of cancer risk assessment. Prerequisites: Genetic Counseling 200A, 200B.

200L Cytogenetics Laboratory (4) F. Laboratory, 10 hours/week. A practicum introducing methods of specimen collection, short-term lymphocyte and bone marrow culture, long-term fibroblast and amniocyte culture, harvesting and slide preparation, chromosome staining, microphotography, and darkroom techniques. Microscopic chromosome analysis, photographic karyotyping, and the appropriate use of cytogenetic nomenclature are emphasized. Open only to Genetic Counseling students.

201A Introduction to Genetic Counseling (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. Fieldwork. Provides extensive supervised experience in history taking, interviewing, and psychosocial assessment in the clinical genetics setting. Students independently perform telephone, office, and home-visit intake interviews, participate in counseling, and present cases at patient management conferences. Open only to Genetic Counseling students.

201C Clinical Rotation II (4) S. Tutorial and fieldwork. Provides further supervised experience in genetic counseling, case management, clinic administration and organization, and the use of community resources. Emphasis is on sharpening counseling skills and on developing a professional identity and code of ethics. Open only to Genetic Counseling students.

201D Prenatal Diagnosis Counseling (4) S. Tutorial and fieldwork. A practicum with extensive supervised experience in prenatal diagnosis counseling which provides the student with the opportunity to conduct genetic counseling sessions semi-independently and to further develop clinical skills. Open only to Genetic Counseling students. Prerequisites: 200A, 200B, and 200C.

202A Counseling in Human Genetics: Theory and Methods (3) S. Lecture and discussion, two hours. Theoretical approaches, counseling models and methods, and bio-psychosocial assessment strategies are examined in the context of genetic counseling. Contract-setting, working alliance, the use of self and evaluation methods. Beginning counseling and peer supervision skills are practiced in class. Open only to Genetic Counseling students.

202B Community Resources (2) F. Seminar and activity, two hours. Lectures, guest speakers, and community visits acquaint the genetic counselor with public and private health care and funding agencies, parent support and advocacy groups, and other resources available to assist individuals and families confronted with genetic disorders, developmental disabilities, and birth defects. Open only to Genetic Counseling students.

202C Ethical Issues in Human Genetics (2) S (odd years). Lecture and discussion, two hours. Explores major social, legal, and ethical issues in genetic counseling including those arising in genetic screening, prenatal diagnosis, informed consent, privacy and confidentiality, rights of the disabled, new genetic and reproductive technologies, treatment, and access to services. Prerequisite: consent of instructor.

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.

204A, B, C Professional Skills Development (4, 4, 4) F, W, S. Hones and augments existing competencies in genetic counseling through ongoing clinical experiences. Students develop skills in use of computers for genetics applications, provision of community and professional education, and clinic administration. Further experience in genetics laboratories or specialty clinics may be elected by students. Open only to Genetic Counseling students.

295 Master's Thesis Research and Writing (4 to 8) F, W, S. Tutorial. Under the supervision of one or more faculty members, the student designs and conducts a research project or completes a case report. A problem in the cytogenetics, biochemical, clinical, psychosocial, or behavioral areas of medical genetics may be investigated. Prerequisite: consent of instructor.

Microbiology and Molecular Genetics

Building B, Room 240, Medical Sciences I; (949) 824-5261
Bert L. Semler, **Department Chair**

Faculty

Alan G. Barbour: Microbial pathogenesis
Vincent J. Caiozzo: Sarcomeric gene expression; contractile function; skeletal muscle plasticity
Dennis D. Cunningham: Proteases and protease nexins: regulation of neural cells
Xing Dai: Role of regulatory OVO proteins in mouse epidermal and reproductive differentiation
Mark Fisher: Mechanisms of occurance and prevention of cerebral vascular stroke
Alan L. Goldin: Molecular analysis of ion channels and their roles in human diseases
George A. Gutman: Potassium channel and immunoglobulin super-family genes
G. Wesley Hatfield: Effects of DNA topology on gene expression
Klemens J. Hertel: Regulation of gene expression by alternative splicing
W. Ian Lipkin: Molecular/cellular biology of Borna disease virus; animal models for neuropsychiatric diseases; application of subtractive cloning methods to studies in neuropathogenesis
W. Edward Robinson: Molecular pathogenesis of lentivirus infection and drug discovery against HIV
Hamid M. Said: Cellular and molecular aspects of intestinal and renal vitamin transporters
Rozanne M. Sandri-Goldin: Regulatory functions of a post-transcriptionally acting herpes virus protein
Michael E. Selsted: Innate immunity mediated by 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
Ming Tan: Bacterial pathogenesis; gene regulation in chlamydia
Bruce Tromberg: Optical spectroscopy in cells and tissues
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 (MBG&B), which is described in a previous section. Students admitted into the MBG&B program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year.

Participation in the Department's seminar series and completion of at least one advanced topics course per year for three years are expected of all students. In their third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending 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; (949) 824-7651
Larry Stein, **Department Chair**
Frances M. Leslie, **Graduate Program Director/Advisor**

Faculty

Stephen C. Bondy: Mechanisms of neural regenerative responses to neurological insults
Olivier Civelli: Molecular biology of G protein-coupled receptors; search for novel neurotransmitters and neuropeptides; pharmacological and behavioral characterizations of the novel neurotransmitters and neuropeotides
Sue Piper Duckles: Pharmacology and physiology of vascular smooth muscle; regulation of cerebral circulation, pharmacology of the autonomic nervous system
Frederick J. Ehlert: Muscarinic receptor coupling mechanisms; subtypes of muscarinic receptors
Kelvin W. Gee: Pharmacology of allosteric modulators of the $GABA_A$ receptor
Diana N. Krause: Cerebrovascular and neurotransmitter pharmacology; melatonin receptors; vascular effects of gonadal hormones
Frances M. Leslie: Effects of drugs of abuse on central nervous system development
Ellis R. Levin: Neuroendocrinology and neurobiology of hypothalmic peptides; molecular biology of atrial natriuretic peptides and their receptors
Daniele Piomelli: Biochemistry and pharmacology of the endogenous cannabinoid system
Ralph E. Purdy: Vascular neurotransmitter receptors, second messengers and signal transduction; cardiovascular effects of microgravity
Larry Stein: Neurochemistry of reward, punishment, and long-term memory
Qun-Yong Zhou: Molecular mechanisms of dopamine receptor signaling; developmental and behavioral consequences in transgenic mice with perturbed dopamine signaling

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, 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 pass the written qualifying examination by the eighth quarter and the oral qualifying examination for the Ph.D. by the eleventh quarter. All requirements for the Ph.D. degree should be completed within four to five years. For more information, contact the Graduate Advisor, Department of Pharmacology.

GRADUATE COURSES IN PHARMACOLOGY AND TOXICOLOGY

210 Chemical Neuroanatomy (4). Lecture, two hours; seminar, two hours. Organization of the nervous system, especially with respect to chemical identity of elements, for students of pharmacology. Major cell types, methods of study, ultrastructure, synaptic organization of functionally defined systems, localization of chemically defined cells and receptors, and brain development.

241A-B Medical Pharmacology and Therapeutics (6-6) F, W. Lecture and seminar, eight hours. Principles of pharmacology and in-depth study of drug action. Pharmacokinetics and pharmacodynamics: absorption, distribution and metabolism, general principles of action and receptor concepts. Discussion of major drug classes: molecular mechanism of action, physiological consequences of administration, and clinical use. Prerequisites: Physiology and Biophysics 206A-B and Molecular Biology and Biochemistry 210A.

248A-B-C Advanced Topics in Pharmacology (4-4-4). Lecture, conferences, seminar, 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. Ligand gated ion channels, G protein linked receptors, receptor tyrosine kinases, ligand regulated transcription factors, their signaling mechanisms, trafficking and physiological responses. Analysis of receptor properties by pharmacological methods, radioligand binding, and molecular biology.

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) F, W, S. Lecture, four hours; laboratory, eight hours. Receptor analysis: bioassay measuring contraction, calcium mobilization, second messenger responses; operant conditioning: whole animal, single neuron; radioligand binding; quantitative autoradiography; immunocytochemistry; in situ hybridization for analysis of mRNA; Western and Northern analysis; transgenic mouse knock in and knock out techniques. Prerequisite: consent of instructor.

255 Chemical Transmission (4) S. Lecture, two hours; seminar, two hours. Mechanisms underlying chemical signaling processes in the brain and periphery. Molecular biology, signal transduction, transmitter synthesis and inactivation, pharmacology of integrative function and behavior. Prerequisite: consent of instructor.

256 Experimental Design for Pharmacologists (1) F, W, S. Lecture, one hour; discussion, one hour; laboratory, one hour. Population and sample statistics, hypothesis testing, analysis of variance, nonparametric statistics, experimental design, power, and the use of statistical computer software. Prerequisite: Pharmacology 252 or consent of instructor.

257 Ethics in Research (1) F, W, S. Lecture, one hour; discussion, one hour. Ethical conduct in research including data handling, authorship, conflict of interest, animal rights, handling of misconduct. Prerequisite: Pharmacology 299 or consent of instructor. May be taken for credit two times.

298 Seminar (2) F, W, S. Presentation and discussion of current problems and methods in teaching and research in pharmacology, toxicology, and therapeutics.

299 Research (1 to 12) F, W, S

Department of Physiology and Biophysics

Building D, Room 340, Medical Sciences I; (949) 824-5863
Janos K. Lanyi, **Department Chair**

Faculty

Nancy L. Allbritton: Signal transduction by second messengers and protein kinases
Kenneth M. Baldwin: Developmental, hormonal, and exercise factors regulating striated muscle gene expression
Michael E. Barish: Astrogial modulation of the differentiation of voltage-gated potassium currents; mechanisms of intracellular Ca^{2+} release
Ralph A. Bradshaw: Structure and function of polypeptide growth factors and their receptors; mechanisms of protein turnover
Michael D. Cahalan: Ion channels and Ca^{2+} signaling in the immune system
Vincent J. Caiozzo: Cellular and molecular mechanisms regulating the mechanical properties of skeletal muscle
K. George Chandy: Molecular biology of ion channels and their role in immune cells
J. Jay Gargus: Molecular analysis of membrane signaling proteins
Alan L. Goldin: Molecular biology of neural channels and receptors
George A. Gutman: Molecular and evolutionary studies of immunoglobulin and ion channel genes
Harry T. Haigler: Structure, function, and topography of annexin calcium binding proteins on membranes
James E. Hall: Biophysics of membrane channels, gap junctions and water channels
Frances A. Jurnak: Macromolecular crystallography; biochemical and structural studies of a model G protein; EF-Tu; structure/function of plant virulence factors
Janos K. Lanyi: Transport and energy coupling in the membrane of *Halobacterium salinarium*
Shin Lin: Cellular and molecular biophysics of proteins involved in membrane-associated cytoskeletal functions and signal transduction
Kenneth J. Longmuir: Intracellular metabolism, sorting, and transport of lipid in mammalian cells; membrane fusion
Hartmut Luecke: Protein crystallography; structure and function of membrane-associated proteins
Alexander McPherson: X-ray diffraction analyses of enzymes, viruses; antibodies and protein-nucleic acid complexes; crystallization methods; microgravity crystallization
Paul A. Negulescu: Physical requirements for T-cell activation; G-protein coupled receptor activation linked to β-lactamase expression
Thomas L. Poulos: Protein crystallography; protein engineering; heme enzyme structure and function
Hamid M. Said: Cellular and molecular mechanisms and regulation of intestinal and renal vitamin transporters
Ivan Soltesz: Plasticity and modulation of inhibitory synaptic neurotransmission
Bruce J. Tromberg: Optical spectroscopy of tissues and cells
Larry E. Vickery: Molecular chaperones and protein folding; protein engineering
Stephen H. White: Protein folding in membranes; peptide-bilayer interactions; membrane structure

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.

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

101 The City Drive South, Route 140
Orange, CA 92868; (714) 456-6595
Anton N. Hasso, **Department Chair**

Faculty

Zang-Hee Cho: Multidimensional imaging; NMR tomography, and positron emission tomography

Fred Greensite: Magnetic Resonance Imaging; quantitative electrocardiography

Anton N. Hasso: Magnetic Resonance Imaging of the brain, spine, head, and neck; high-resolution Computed Tomography applications in imaging

Joie P. Jones: Ultrasonic tissue characterization; ultrasonic imaging; general applications of ultrasound technology; the propagation and scattering of ultrasonic pulses in inhomogenous media; biological effects of ultrasound; acoustical microscopy

Sabee Molloi: Digital radiography; application of digital subtraction angiography to cardiac imaging; digital image processing; coronary artery flow measurement

Orhan Nalcioglu: 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 Roeck: 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 developing 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 has 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.

Prospective students should contact the Department of Radiological Sciences for information about this program prior to applying.

GRADUATE COURSES IN RADIOLOGICAL SCIENCES

201A-B Fundamentals of Biomedical Imaging Systems (4-4) F, W. Lecture, three hours. Physical principles and methods of biomedical imaging systems. Linear systems, random processes, projection imaging, computed tomography, x-rays, nuclear medicine, ultrasound, optical imaging, NMR, EEG, MEG imaging and impedance tomography. Same as Engineering ECE237A-B and Physics 233A-B.

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: Gray Davis
Lieutenant Governor of California: Cruz Bustamante
Speaker of the Assembly: Robert Hertzberg
State Superintendent of Public Instruction: Delaine Eastin
President of the Alumni Association of the University of California: Kent Vining
Vice President of the Alumni Associations of the University of California: Peter Taylor
President of the University: Richard C. Atkinson

Appointed Regents[1]

William T. Bagley (2002)
Ward Connerly (2005)
John G. Davies (2004)
Judith L. Hopkinson (2009)
Odessa P. Johnson (2012)
S. Sue Johnson (2002)
Meredith Khachigian (2001)
Joanne Kozberg (2010)
Sherry L. Lansing (2010)
Howard H. Leach (2001)
David S. Lee (2006)
Velma Montoya (2005)
John J. Moores (2009)
S. Stephen Nakashima (2004)
Gerald L. Parsky (2008)
Peter Preuss (2008)
Tom Sayles (2006)
Justin W. Fong (July 1, 2001–June 30, 2001)

Regents-Designate [2]

Markell W. Kohn
Irene Miura

[1] Regents, except ex-officio Regents and the student Regent, are appointed by the Governor to 12-year terms commencing on March 1. Ex-officio Regents serve by virtue of their elected or appointed positions; the student Regent is appointed by the Regents to a one-year term commencing on July 1.

[2] One-year terms expiring June 30.

Faculty Representatives to The Regents

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Michael Cowan

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Jill Beck

Dean, School of Biological Sciences
Susan V. Bryant

Dean, Henry Samueli School of Engineering
Nicolaos G. Alexopoulos

Dean, School of Humanities
Karen R. Lawrence

Dean, Graduate School of Management
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Dean, School of Social Ecology
C. Ronald Huff

Dean, School of Social Sciences
William R. Schonfeld

Dean, College of Medicine
Thomas C. Cesario

Dean, Division of Undergraduate Education
Meredith Lee

Vice Chancellor, Research, and Dean, Graduate Education
William H. Parker

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Chair, Department of Information and Computer Science
Michael J. Pazzani

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Assistant Vice Chancellor, Academic Personnel: Patricia L. Price
Assistant Executive Vice Chancellor and Director, Equal Opportunity and Diversity: R. Ronald Wilson
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Assistant Executive Vice Chancellor, Resource Management and Analysis: Roy E. Dormaier
Associate Vice Chancellor, Biomedical Initiatives: Shin Lin
University Ombudsman: Kathleen Canul
University Librarian: Gerald J. Munoff
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Associate Dean, Graduate Studies: Martha L. Mecartney
Associate Vice Chancellor, Student Affairs: Charles R. Pieper
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Assistant Vice Chancellor/Director, Bren Events Center: Bernadette M. Strobel-Lopez
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Dean of Students: Sally K. Peterson
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Assistant Vice Chancellor, Advancement, and Executive Director, Development: Regina Fodor
Assistant Vice Chancellor, University Advancement Finance and Administration: Kathleen Kunz

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*
University of California, San Francisco

E. Margaret Burbidge, *University Professor Emerita*
University of California, San Diego

Marvin L. Cohen, *University Professor*
University of California, Berkeley

Michael Cole, *University Professor*
University of California, San Diego

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University of California, Santa Cruz

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University of California, Irvine

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University of California, Berkeley

Frank H. Shu, *University Professor*
University of California, Berkeley

S. Jonathan Singer, *University Professor Emeritus*
University of California, San Diego

Neil J. Smelser, *University Professor Emeritus*
University of California, Berkeley

Edward Teller, *University Professor Emeritus*
Lawrence Livermore National Laboratory

Chang-Lin Tien, *University Professor*
University of California, Berkeley

Charles H. Townes, *University Professor Emeritus*
University of California, Berkeley

Sherwood L. 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

Nobel Prize in Chemistry, 1995

F. Sherwood Rowland, *Research Professor of Chemistry and Earth System Science, and Bren Chair*

Nobel Prize in Physics, 1995

Frederick Reines, *UCI Distinguished Professor Emeritus of Physics* (d. 1998)

UCI Endowed Chairs

Daniel G. Aldrich, Jr. Chair
Ralph J. Cicerone, *Chancellor and Professor of Earth System Science and Chemistry*

Arnold and Mabel Beckman Chair in Laser Biomedicine
Michael W. Berns, *Professor of Surgery, Cell Biology, Electrical and Computer Engineering, 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*

Thomas J. Carew, *Department Chair and Professor of Neurobiology and Behavior*

Wilson Ho, *Professor of Physics and Chemistry*

F. Sherwood Rowland, *Research Professor of Chemistry and Earth System Science*

John E. Connolly Chair in Surgery
Samuel E. Wilson, *Department Chair and Professor of Surgery*

Walter B. Gerken Chair in Enterprise and Society
Richard B. McKenzie, *Professor of Management and Economics*

Robert Gumbiner Chair in Health Care Management
Paul J. Feldstein, *Professor of Management, Economics, and Social Ecology*

Clifford and Elaine Heinz Chair in the Economics and Public Policy of Peace
Martin C. McGuire, *Professor of Economics and Management*

Roger W. and Janice M. Johnson Chair in Civic Governance: The Social Ecology of Public Management
Mark Baldassare, *Professor of Urban and Regional Planning and of Social Ecology*

Irving H. Leopold Chair in Ophthalmology
Peter McDonnell III, *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 in Psychiatry
William E. Bunney, Jr., *UCI Distinguished Professor of Psychiatry and Human Behavior and of Pharmacology*

Eric L. and Lila D. Nelson Chair in Neuropharmacology
Olivier Civelli, *Professor of Pharmacology and of Developmental and Cell Biology*

Robert and Marjorie Rawlins Chair in Music
Rae Linda Brown, *Department Chair and Associate Professor of Music*

Reeve-Irvine Chair in Spinal Cord Injury Research
Oswald Steward, *Director of the Reeve-Irvine Research Center and Professor of Anatomy and Neurobiology and of Neurobiology and Behavior*

Danette (Dee Dee) Shepard Chair in Neurological Studies
Tallie Z. Baram, *Professor of Pediatrics, Neurology, and Anatomy and Neurobiology*

Robert R. Sprague Chair in Brain Imaging
Steven G. Potkin, *Director of the Brain Imaging Center and Professor of Psychiatry and Human Behavior*

Taco Bell Chair in Information Technology Management
Kenneth L. Kraemer, *Director of the Center for Research on Information Technology and Organizations and Professor of Management and of Information and Computer Science*

Teller Family Chair in Jewish History
Daniel Schroeter, *Professor of History*

Thomas T. and Elizabeth C. Tierney Chair in Peace Studies
Patrick Morgan, *Professor of Political Science*

UC Presidential Chair
Peter M. Rentzepis, *Professor of Chemistry and Ophthalmology*

Drew, Chace, and Erin Warmington Chair in the Social Ecology of Peace and International Cooperation
Helen Ingram, *Professor of Social Ecology and Political Science*

UCI Distinguished Professors

William E. Bunney, Jr., *Distinguished Professor of Psychiatry and Human Behavior and of Pharmacology, and Della Martin Chair in Psychiatry*

David Easton, *Distinguished Research Professor of Political Science*

R. Duncan Luce, *Distinguished Professor Emeritus of Cognitive Sciences and Economics*

David B. Malament, *Distinguished Professor of Logic and Philosophy of Science*

Ricardo Miledi, *Distinguished Professor of Neurobiology and Behavior and of Molecular Biology and Biochemistry*

J. Hillis Miller, *Distinguished Professor of English and Comparative Literature*

Larry E. Overman, *Distinguished Professor of Chemistry*

Donald G. Saari, *Distinguished Professor of Economics and Mathematics*

Brian Skyrms, *Distinguished Professor of Logic and Philosophy of Science and of Economics and Director of the Minor in the History and Philosophy of Science*

George Sperling, *Distinguished Professor of Cognitive Sciences and Biological Sciences*

College of Medicine Distinguished Professor

J. Edward Berk, *Distinguished Professor Emeritus of Medicine (Gastroenterology)*

UCI Faculty Membership in Major U.S. Learned Societies

American Academy of Arts and Sciences: 29

American Association for the Advancement of Sciences: 73

American Physical Society: 21

American Psychological Association: 16

National Academy of Engineering: 1

National Academy of Sciences: 18

National Academy of Sciences–Institute of Medicine: 4

UCI Academic Senate Distinguished Faculty

Distinguished Faculty Lectureships for Research

1999–2000: George Sperling, *Department of Cognitive Sciences and of Neurobiology and Behavior,* "Modeling Human Motion Perception"

1998–99: Walter M. Fitch, *Department of Ecology and Evolutionary Biology,* "Getting the Flu Before It Gets You"

1998: Donald McKayle, *Department of Dance,* "The Symbolic Language of Dance"

1998: Peter M. Rentzepis, *Department of Chemistry,* "The Making of a Molecular Computer"

1997: David Easton, *Department of Politics and Society*

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"

Distinguished Faculty Lectureships for Teaching

1999–2000: Ermanno Bencivenga, *Department of Philosophy,* "Teaching: A Cost/Benefit Analysis"

1998–99: Alberto Manetta, *Senior Associate Dean of the College of Medicine and Professor of Obstetrics and Gynecology,* "Medical Education for the Twenty-First Century"

1998: William R. Schonfeld, *Dean of the School of Social Sciences,* "The Ivory Tower: Relic from the Past or Ambition for the Future"

1997: Medhat A. Haroun, *Department of Civil and Environmental Engineering,* "Earthquakes and California: Are We At Risk and What Are We Doing About It?"

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"

Daniel G. Aldrich Jr. Distinguished University Service Award

1999: Arnold Binder, *Department of Criminology, Law and Society*

1998: Warren L. Bostick, *Department of Pathology*

1997: James N. Danziger, *Department of Political Science and Dean of Undergraduate Education*

1997: Ellen Greenberger, *Department of Psychology and Social Behavior*

1996: Dennis J. Aigner, *Dean of the Graduate School of Management*

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 Research

1999–2000: Wang Feng, *Department of Sociology*

1998–99: Panagiota Daskalopoulos, *Department of Mathematics*

1998–99: William R. Maurer, *Department of Anthropology*

1997–98: Judith Stepan-Norris, *Department of Sociology*

1997–98: Keith A. Woerpel, *Department of Chemistry*

1996–97: Liisa H. Malkki, *Department of Anthropology*

1996-97: Susan E. Trumbore, *Department of Earth System Science*

1995–96: Ann Blair, *Department of History*

1995-96: Kei-Yeung (Sunny) Siu, *Department of Electrical and Computer Engineering*

1994–95: Alec Stone, *Department of Political Science*

Distinguished Assistant Professor Award for Teaching

1999–2000: Steven C. George, *Department of Chemical and Biochemical Engineering and Materials Science*

1999–2000: Claire Jean Kim, *Interdisciplinary Program in Asian American Studies and Department of Political Science*

1998–99: Kristen M. Day, *Department of Urban and Regional Planning*

1998–99: Keith A. Woerpel, *Department of Chemistry*

1997–98: Stanley B. Grant, *Department of Civil and Environmental Engineering*

1996–97: Rhona Berenstein, *Program in Film Studies*

1995–96: Etel Solingen, *Department of Politics and Society*

1994–95: Julia Reinhard Lupton, *Department of English and Comparative Literature*

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 102.08 of the *Policies Applying to Campus Activities, Organizations, and Students*.)

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* 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 Dean of Students, located in the UCI Student Center, and the University Ombudsman, located in 437 Administration Building.

Academic Honesty

The UCI Academic Senate Policies on Academic Honesty were approved by the Irvine Division on June 2, 1988; revised on December 12, 1996; revision effective October 1, 1997.

A. PREAMBLE

The University is an institution of learning, research, and scholarship predicated on the existence of an environment of honesty and integrity. As members of the academic community, faculty, students, and administrative officials share responsibility for maintaining this environment. It is essential that all members of the academic community subscribe to the ideal of academic honesty and integrity and accept individual responsibility for their work. Academic dishonesty is unacceptable and will not be tolerated at the University of California, Irvine. Cheating, forgery, dishonest conduct, plagiarism, and collusion in dishonest activities erode the University's educational, research, and social roles. They devalue the learning experience and its legitimacy not only for the perpetrators but for the entire community.

B. RESPONSIBILITIES

All members of the academic community have a responsibility to ensure that scholastic honesty is maintained.

Faculty have primary responsibility for:

1. Upholding and enforcing universitywide principles of academic honesty and integrity and explaining clearly these principles including any qualifications which may be operative in the classes they are teaching.
2. Minimizing opportunities for academic misconduct in their courses.
3. Confronting students suspected of academic dishonesty in a way that respects student privacy.
4. Affording students accused of academic misconduct the right to appeal any resulting disputes to disinterested parties for hearing and resolution.
5. Assigning an appropriate grade to a student who engages in academic dishonesty.
6. Reporting all instances of academic dishonesty to appropriate Associate Deans.
7. Protecting the anonymity of any student reporting an incident of academic dishonesty to the extent permitted by due process required for the accused and other legal requirements.

Students have responsibility for:

1. Refraining from cheating and plagiarism.
2. Refusing to aid or abet any form of academic dishonesty.
3. Notifying professors and/or appropriate administrative officials about observed incidents of academic misconduct. The anonymity of a student reporting an incident of academic dishonesty will be protected.

C. WHAT IS ACADEMIC DISHONESTY?

Academic dishonesty includes but is not limited to the following examples:

Cheating

1. Copying from others during an examination.
2. Communicating exam answers with other students during an examination.
3. Offering another person's work as one's own.
4. Taking an examination for another student or having someone take an examination for oneself.

5. Sharing answers for a take-home examination or assignment unless specifically authorized by the instructor.
6. Tampering with an examination after it has been corrected, then returning it for more credit.
7. Using unauthorized materials, prepared answers, written notes or information concealed in a blue book or elsewhere during an examination.
8. Allowing others to do the research and writing of an assigned paper (including use of the services of a commercial term-paper company).

Dishonest Conduct

1. Stealing or attempting to steal an examination or answer key from the instructor.
2. Changing or attempting to change academic records without proper sanction.
3. Submitting substantial portions of the same work for credit in more than one course without consulting all instructors involved.
4. Forging add/drop/change cards and other enrollment documents, or altering such documents after signatures have been obtained.
5. Intentionally disrupting the educational process in any manner.
6. Allowing another student to copy off of one's own work during a test.

Plagiarism

Plagiarism is intellectual theft. It means use of the intellectual creations of another without proper attribution. Plagiarism may take two main forms, which are clearly related:

1. To steal or pass off as one's own the ideas or words 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.

Collusion

Any student who knowingly or intentionally helps another student perform any of the above acts of cheating or plagiarism is subject to discipline for academic dishonesty.

D. PROCEDURES FOR DEALING WITH INCIDENTS OF ACADEMIC DISHONESTY

Many, perhaps most, incidents of academic dishonesty involve accusations which are based on clear evidence and which are not contested by the accused student. In such cases, if the infraction is relatively minor and there is no indication that the accused student has previously been involved in such incidents, it is most appropriate that the matter be resolved between the student and the faculty member. When this occurs, it is nevertheless important that a written report of the incident be filed to ensure that penalties assessed are commensurate with the offense and that repeated infractions be detected and dealt with appropriately.

More serious incidents and repeat offenses which call for stronger disciplinary action, may result in campuswide sanctions, in addition to the actions imposed by a faculty member. In such cases, these sanctions, as described in Section 105.00 of the *Policies Applying to Campus Activities, Organizations, and Students*, will be administered by the Academic Associate Deans or the Office of the Dean of Undergraduate Education or Graduate Studies.

Finally, whenever an accusation of academic dishonesty or a grade given by a faculty member is contested by an accused student, the student has recourse for mediation of the dispute. Processes for mediation resolution and/or an investigation may be requested by the student or the Associate (Undergraduate or Graduate) Dean of the faculty member's school through the Office of the Ombudsman. In incidents where a campuswide sanction has been imposed, the student can request a hearing with the appropriate Committee on Academic Honesty which will be convened by the Office of either the Dean of Undergraduate Education or the Dean of Graduate Studies, depending on the status of the accused student.

The procedures outlined here are designed to institute a system that recognizes that many cases of academic misconduct are best resolved 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 must present the evidence to the student in a private meeting or communicate with the student by some other means. The faculty member must initiate this communication with the student within 15 calendar days of discovering evidence of academic dishonesty and evaluating the relevant work. The faculty member then has the authority to impose only one or more of the following:

1. Issue a reprimand to the student with letter of explanation to the student's file.
2. Require repetition of the questionable work or examination with letter of explanation to the student's file.
3. Reduce the grade to an 'F' or zero, if appropriate, on the questionable work or examination with written notification to the student and a letter of explanation to the student's file.
4. Assign the student a failing grade in the course with letter of explanation to the student's file.

It is essential that any such action be reported in writing to the student in a letter from the faculty member. Copies of this letter must also be sent to (a) the Associate Dean of the faculty member's school, (b) the Associate Dean of the student's school, who will maintain a file of cases of academic misconduct involving students enrolled in that school, and (c) the Office of the Dean of Undergraduate Education or Dean of Graduate Studies, as appropriate. The faculty member is strongly encouraged to consult with the Associate (Undergraduate or Graduate) Dean of his or her school before the letter is drafted. Reference to (or a copy of) the UCI Academic Senate Policies on Academic Honesty should be included in the letter. If action (4) is taken, the faculty member is responsible for making certain that the failure is recorded by the Registrar on the student's permanent academic record. Careful documentation of the incident must be maintained by the faculty member in the event that his or her actions in the case should later be subject to review.

Responsibilities of the Academic Associate Deans

1. The Associate (Graduate or Undergraduate) Dean of either the accused student's school or of the faculty member's school may impose campuswide sanctions. Sanctions imposed by Associate Deans are final unless the student requests a hearing within 15 calendar days of notification. The 15-day period starts from the time the Associate Dean has notified the student of the discipline or has notified the student of the hearing and appeal process by providing a copy of this policy, whichever comes later. It is recommended that each case be brought to a final resolution within 90 days of instruction.
2. The Associate Dean (or equivalent official) of each school is responsible for maintaining confidential records concerning academic dishonesty of students enrolled in that school. All letters reporting faculty-imposed academic penalties for academic misconduct will be included in these files.
3. The Associate Dean of the accused student's school will be responsible for identifying all incidents which represent repeated offenses by a student and may impose a campuswide sanction because of repeat offenses.
4. Associate Deans are required to notify the student of the hearing and appeal process and provide the student a copy of this policy. If an Associate Dean suspects grounds for a grievance involving discrimination, the student should be referred to Part 3 of *The Manual of the Irvine Division of the Academic Senate,* "Student Academic Grievance Process" (which is limited to allegations of discrimination).
5. In those classes where academic dishonesty continues to be a problem and the faculty member or another university official has already been approached by the student(s) from the class, the Associate Dean will consult with the appropriate faculty member to address the problem.
6. Students who have on file recorded acts of academic dishonesty, as defined by the *Policies Applying to Campus Activities, Organizations, and Students,* may be excluded by the Associate Deans from consideration for academic honors at graduation.
7. In those situations where a campuswide sanction is imposed and the student requests a hearing, the Associate Dean will forward to the Committee on Academic Honesty the materials which led him or her to impose the sanction. In addition, the Associate Dean will appear before the Committee to discuss the case upon request of the Committee.

Student Hearings

When any student accused of academic dishonesty wishes to contest a sanction imposed by a faculty member, the student may, within a 15-day period, request mediation by writing to the Associate Dean of the faculty member imposing the sanction or to the Ombudsman. However, it should be understood that all grades are ultimately the responsibility of faculty. The period is 15 calendar days and starts from the time the Associate Dean has notified the student of the discipline or has notified the student of the hearing and appeal process by providing a copy of this policy, whichever comes later.

When a campuswide sanction is imposed, the affected student may, within 15 days of notification, request a hearing before the Committee on Academic Honesty. Students considering a hearing in response to campuswide sanctions for alleged academic misconduct are urged to contact the Associate Dean of their academic school and/or the University Ombudsman concerning possible sources of advice and assistance. Students should be advised regarding the grounds for appeal as specified in section 103.11 of the *Policies Applying to Campus Activities, Organizations, and Students*.

Role of the Ombudsman

The services of the Ombudsman may be requested at any time by the student, the faculty member, or the Associate Dean. The role of the Ombudsman is to assist in conflict resolution, mediate the dispute, perform an informal investigation of the case, and clarify policies and procedures for anyone involved.

In those incidents where imposition of a campuswide sanction is a consideration and the student has requested a hearing, the case will be referred to the Office of the Ombudsman. An investigation may be conducted by the Ombudsman who will then confer with the Associate Dean and the accused student. However, the findings of the Ombudsman will not be forwarded to the Committee on Academic Honesty. The case may be referred by either the student or the Ombudsman to either the Dean of Undergraduate Education or the Dean of Graduate Studies, as appropriate, who will be responsible for convening the Committee on Academic Honesty.

Students should always be informed by the Associate Dean of their school of their right to secure the assistance of the Ombudsman in understanding and addressing the problem or issue.

Role of the Deans of Undergraduate Education and Graduate Studies

Whenever an incident of academic misconduct is referred to the Office of the Dean of Undergraduate Education or the Dean of Graduate Studies by the student or the Ombudsman, a representative of the appropriate offices will meet with the student and, if requested, explain the process and arrange the time and place of a hearing before the appropriate (Undergraduate or Graduate) Committee on Academic Honesty. The appropriate Dean will maintain a record of all cases of academic dishonesty reported by the respective Associate Deans.

Formal resolution by the appropriate Committee on Academic Honesty may result in the imposition by the Dean of Undergraduate Education or the Dean of Graduate Studies of one or more of the sanctions described in section 105.00 of the *Policies Applying to Campus Activities, Organizations, and Students,* including suspension or dismissal from the University.

E. COMMITTEE ON ACADEMIC HONESTY

1. Jurisdiction of the Committees on Academic Honesty

There will be two Committees on Academic Honesty. One Committee will hear cases of campuswide sanctions on undergraduate students while the other will hear graduate student cases. The Committees can reduce, affirm, or increase sanctions.

2. Composition of the Committees on Academic Honesty

The Committees on Academic Honesty will be standing administrative committees composed of two faculty, two students, and a representative of either the Dean of Undergraduate Education or Dean of Graduate Studies, as appropriate. Terms of faculty members will be two years. One faculty member will be appointed annually by either the Dean of Undergraduate Education or Graduate Studies, as appropriate for the particular committee. To ensure continuity, terms will be staggered; during the first year of operation only, one faculty member will be appointed for a one-year term. One additional faculty member will be appointed to serve as an alternate to each of the Committees. The two students shall serve for one year and will be appointed by either ASUCI or AGS as appropriate to the specific committee. One additional student member will be appointed to serve as an alternate to each of the Committees.

3. Role of the Associate Dean

The Associate Dean will forward to the committee the evidence which led to his or her decision to impose the campuswide sanction. In addition, the Associate Dean will appear before the Committee to comment on the case if the Committee wishes.

4. Hearings

a. If the student requests a hearing, the Dean of Undergraduate Education or the Dean of Graduate Studies shall schedule a hearing of the case before the appropriate Committee. Written notice must be given to the parties involved regarding the date, time, and place of the hearing.

b. The chair will be elected by the membership of the committee. The chair will rule on all questions of procedure, the admission or exclusion of evidence, and the need to call witnesses for additional testimony. Hearings shall be held in accordance with generally accepted standards of procedural due process.

c. Hearings will be closed unless the parties involved agree to an open hearing. Every effort must be made by all parties to maintain confidentiality during the process.

d. Hearings shall be held following the provisions in sections 103.11. (5, 6, and 8) of the *Policy on Student Conduct and Discipline,* except that the role of the Dean of Students shall be filled by the Dean of Undergraduate Education or Graduate Studies, depending on the status of the student.

5. Report of the Committee on Academic Honesty

After the hearing the Committee shall arrive at a decision. When a decision is reached, the student and the appropriate Academic Associate Dean will be informed of the judgment.

6. Final Appeal

If the campuswide sanction is upheld by the Committee, the report of the Committee and all supporting evidence can be sent for a final level of review at the request of the student. If the accused student is an undergraduate, the case will be reviewed by the Dean of Graduate Studies. If the accused student is a graduate student, the case will be reviewed by the Dean of Undergraduate Education. This final review process can only result in decreasing the sanctions imposed on the student or leaving them unchanged. There are no further appeals or processes.

7. Implementation

Once the judgment has been rendered the Dean of Undergraduate Education or Graduate Studies will implement the judgment in the form of a letter to the student as well as initiate any other necessary administrative actions.

F. MAINTENANCE OF DISCIPLINARY RECORDS

Records relating to academic dishonesty will be maintained by the Associate Deans and the Offices of the Deans of Undergraduate Education and Graduate Studies to promote consistency of penalties for a given offense and to ensure appropriate action against repeat offenders. Records will normally be destroyed after five years, unless the Associate Dean determines in any particular case that there is good reason to extend the period of retention. In order to ensure that minor and nonrecurring infractions do not negatively impact a student's career beyond UCI, any student may petition to the Associate Dean of his or her academic school to have relevant academic disciplinary records expunged after the record is two years old or upon graduation, whichever comes first. The Associate Dean has sole authority to consider and to grant or deny such petitions. The University will release a student's disciplinary records to potential employers, governmental agencies, other educational institutions, or other organizations or individuals only if authorized to do so by the student in question or if compelled by law. Any record expunged by the Associate Dean will also be erased in the Dean of Undergraduate Education or Graduate Studies Offices.

ADDITIONAL INFORMATION

This policy is intended to focus solely on issues related to academic dishonesty. Certain details of the implementation of procedures specified here can be found in the UCI publication *Policies Applying to Campus Activities, Organizations, and Students,* available free of charge from the Office of the Ombudsman, Room 437 Administration, and the Office of the Dean of Students, first floor, Student Center.

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- and Network-Use Policy

The University of California, Irvine (UCI) provides computing resources and worldwide network access to members of the UCI electronic community for legitimate academic and administrative pursuits to communicate, access knowledge, and retrieve and disseminate information. All members of the UCI community (faculty, staff, students, and authorized guests) sharing these resources also share the rights and responsibilities for their use.

Rights and Responsibilities

Worldwide, open-access electronic communication is a privilege and continued access requires that users act responsibly. Users should be able to trust that the products of their intellectual efforts will be safe from violation, destruction, theft, or other abuse. Users sharing computing resources must respect and value the rights and privacy of others, respect the integrity of the systems and related physical resources, and observe all relevant laws, regulations, and contractual obligations. Users are responsible for refraining from acts that waste resources, prevent others from using them, harm resources or information, or abuse other people. To help protect files, users are responsible for setting passwords appropriately and for keeping passwords confidential by not giving them to another person.

Most UCI-owned computers are under the control of a system administrator or lab manager. These administrators are expected to respect the privacy of computer system users. However, UCI computer system administrators may access user files or suspend services on the systems they manage without notice as required to protect the integrity of computer systems or to examine accounts that are suspected of unauthorized use, misuse, or have been corrupted or damaged. This includes temporarily locking vulnerable accounts, removing hung jobs, reprioritizing resource intensive jobs, and such.

Many UCI departments have their own computing and networking resources and policies. When accessing computing resources, users are responsible for obeying both the policies described here and the policies of other departments. Student responsibilities are also described in the *Policies Applying to Campus Activities, Organizations, and Students*. In addition, all users are responsible for obeying policies of off-campus network services accessed using UCI resources.

Examples of Misuse

Examples of misuse include, but are not limited to:

- Knowingly running or installing on any computer system or network, or giving to another user, a program intended solely for the purpose of damaging or placing excessive load on a computer system or network. This includes, but is not limited to, computer viruses, Trojan horses, worms, bots, flash programs, or password cracking programs.
- Attempting to circumvent data protection schemes or uncover security loopholes without prior written consent of the system administrator. This includes creating and/or running programs that are designed to identify security loopholes and/or intentionally decrypt secure data.
- Using computers or electronic mail to act abusively toward others or to provoke a violent reaction, such as stalking, acts of bigotry, threats of violence, or other hostile or intimidating "fighting words." Such words include those terms widely recognized to victimize or stigmatize individuals on the basis of race, ethnicity, religion, sex, sexual orientation, disability, and other protected characteristics.
- Posting on electronic bulletin boards or Web pages materials that violate the University's codes of conduct (faculty, student). This includes posting information that is slanderous or defamatory in nature or displaying graphically disturbing or sexually harassing images or text in a public computer facility or location that are in view of other individuals.
- Attempting to monitor or tamper with another user's electronic communications or reading, copying, changing, or deleting another user's files or software without the explicit agreement of the owner.
- Violating terms of applicable software licensing agreements or copyright laws.
- Using campus networks to gain, or attempt to gain, unauthorized access to any computer system.
- Using a computer account or obtaining a password without appropriate authorization.
- Facilitating or allowing use of a computer account and/or password by an unauthorized person.
- Masking the identity of an account or machine. This includes sending mail that appears to come from someone else.
- Performing an act without authorization that will interfere with the normal operation of computers, terminals, peripherals, networks, or will interfere with others' ability to make use of the resources.
- Using an account for any activity that is commercial in nature not related to work at UCI, such as consulting services, typing services, developing software for sale, advertising products, and/or other commercial enterprises for personal financial gain.
- Deliberately wasting computing resources, such as playing games (for example, MUDS or IRC) while someone else is waiting to use the computer for UCI-related work, sending chain letters, spamming, treating printers like copy machines, storing or moving large files that could compromise system integrity or preclude other users' right of access to disk storage, and the like.

Consequences of Misuse

Misuse of computing, networking, or information is unacceptable, and users will be held accountable for their conduct. Serious infractions can result in temporary or permanent loss of computing and/or network privileges and/or Federal or State legal prosecution. Appropriate corrective action or discipline may be taken in conformance with applicable personnel policies, student policies, collective bargaining agreements, and procedures established by the Academic Senate. California Penal Code, Section 502 makes certain computer abuses a crime, (such as illegal reproduction of software protected by U. S. copyright law) and penalties can include a fine and/or imprisonment. Files may be subject to search under proper authorization.

Minor infractions of this policy, such as poorly chosen passwords, overloading systems, excessive disk space consumption, are typically handled internally to the department in an informal manner. More serious infractions such as abusive behavior, account invasion or destruction, attempting to circumvent system security, and the like are handled formally through the Office of the Dean of Students or by other appropriate officials.

Contact Information

For additional information, contact the Office of Academic Computing (E2130 Engineering Gateway Building) by calling (949) 824-6116, or by sending electronic mail to oac@uci.edu.

Student Records

The University of California campuses maintain various types of records pertaining to students; some are maintained for academic purposes; others, such as medical records, are maintained for other specific purposes. Student records—that is, those pertaining to students in their capacity as students—include but are not limited to academic evaluations, transcripts, test scores and other academic records, general counseling and advising records, disciplinary records, and financial aid records. At UCI, an "applicant" becomes a "student" at the time of submission of the Statement of Intent to Register form.

The disclosure of information from student records is governed in large measure by the Federal Family Educational Rights and Privacy Act of 1974, 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. complaints regarding alleged violation of the rights accorded students by the federal Act may be filed with the Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Avenue S.W., Washington, D.C. 20202-4605;
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 *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 (e-mail, 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 University Ombudsman, 437 Administration.

It is extremely important for each student to keep the Registrar's Office currently informed as changes to personal data 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,* copies of which are available in the Office of the Dean of Students and on the World Wide Web at http://www.students.uci.edu/~students/JUDICIAL/uci_policy.html/.

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 Center	Student Services I	Director, Career Center
Child Care Services	Early Childhood Education Center	Director, Child Care Services
Counseling	Student Services	Director, Counseling Services
Dean of Students	Student Center	Dean of Students
Disability Services	Disabled Student Center	Director, Disability Services
Education Abroad Program	Student Services	Coordinator, EAP
Financial Aid	Administration	Director, Financial Aid
Financial Services (Cashier, Collections)	Administration	Manager, Financial Services
Housing	Housing Administrative Services	Director, Housing
International Center	Student Services I	Director, International Center
Learning and Academic Resource Center	Fourth Floor, Social Science Tower	Director, Learning and Academic Resource Center
Ombudsman Services	Administration	University Ombudsman
Parking	Public Services Facility	Parking Supervisor
Placement Testing Program	Student Services I	Director, Testing, Research, and Evaluation
Registrar— Graduate/Undergraduate College of Medicine	Administration Med. Sci. I	Registrar 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
Undergraduate Education	Administration	Dean, Undergraduate Education
University Extension	University Extension	Dean, Continuing Education
Veterans	Student Center	Coordinator, Veterans Student Services
Incidental Records (minutes of various committees, copies of correspondence in offices not listed above, and other records not listed	Administration	Vice Chancellor Student Affairs, or other Student Affairs officials

Subject Abbreviations

The following abbreviations are used in the *Schedule of Classes* and on student transcripts to indicate course designations.

Prefix	Long Name
AFAM	African-American Studies
ANATOMY	Anatomy and Neurobiology
ANTHRO	Anthropology
ART HIS	Art History
ART STU	Art Studio
ARTS	Arts Interdisciplinary
ASIANAM	Asian American Studies
BIO SCI	Biological Sciences
BIOCHEM	Biological Chemistry
CHEM	Chemistry
CHINESE	Chinese
CLASSIC	Classics
COM LIT	English and Comparative Literature
CRITISM	Criticism
CRM/LAW	Criminology, Law and Society
DANCE	Dance
DEV BIO	Developmental and Cell Biology
DRAMA	Drama
E ASIAN	East Asian Languages and Literatures
EARTHSS	Earth System Science
ECO EVO	Ecology and Evolutionary Biology
ECON	Economics
EDU ABR	Education Abroad
EDUC	Education
ENGLISH	English and Comparative Literature
ENGR	Engineering
ENGRCEE	Engineering, Civil and Environmental
ENGRCHE	Engineering, Chemical
ENGRECE	Engineering, Electrical and Computer
ENGRMAE	Engineering, Mechanical and Aerospace
ENGRMSE	Engineering, Materials Science
ENV TOX	Environmental Toxicology
ENVIRON	Environmental Analysis and Design
FILMSTD	Film Studies
FRENCH	French
GENETIC	Genetic Counseling
GERMAN	German
GREEK	Greek
HISTORY	History
HUMAN	Humanities
I&C SCI	Information and Computer Science
ITALIAN	Italian
JAPANSE	Japanese
KOREAN	Korean
LATIN	Latin
LINGUIS	Linguistics
M&MG	Microbiology and Molecular Genetics
MATH	Mathematics
MGMT	Management
MGMT EP	Management EMBA – Executive MBA
MGMT FE	Management FEMBA – Fully Employed MBA
MGMT HC	Management HEMBA – Health Care MBA
MOL BIO	Molecular Biology and Biochemistry
MUSIC	Music
PED GEN	Pediatrics
PHARM	Medical Pharmacology
PHILOS	Philosophy
PHY ED	Physical Education
PHY SCI	Physical Science
PHYSICS	Physics
PHYSIO	Physiology
POL SCI	Political Science
PORTUG	Portuguese
PSY BEH	Psychology and Social Behavior
PSYCH	Psychology
RAD SCI	Radiological Sciences
RUSSIAN	Russian
SOC SCI	Social Science
SOCECOL	Social Ecology
SOCIOL	Sociology
SPANISH	Spanish
TOX	Toxicology
UNEX	University Extension
UNI AFF	University Affairs
UNI STU	University Studies
URBPLAN	Urban and Regional Planning
VIS STD	Visual Studies
VIETMSE	Vietnamese
WOMN ST	Women's Studies
WRITING	Writing

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 (949) 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.

TO REPORT AN INCIDENT

On campus, 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, dial (714) 456-6123 for a police emergency or (714) 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.

UCI CRIME STATISTICS: 1997-99

Campus	1997		1998		1999	
Offense	Reported	Cleared	Reported	Cleared	Reported	Cleared
Homicide	0	0	0	0	0	0
Rape	1	1	1	0	1	1
Attempted Rape	1	1	0	0	0	0
Sexual Offense – nonviolent	4	3	3	0	1	1
Robbery	1	1	1	0	0	0
Aggravated Assault	11	11	7	3	3	3
Burglary	45	2	41	2	28	6
Hate Crimes	1	1	1	0	1	0
Motor Vehicle Theft	21	15	25	0	25	2
Simple Assault	12	10	12	3	16	15
Theft (includes bicycles)	409	35	392	11	459	34
Vandalism	58	0	56	2	75	3
Drug/Narcotics Offenses	3	3	38	38	25	25
Weapons Offenses	14	13	7	5	10	10
Alcohol	36	36	34	34	9	9
Arson					4	2

Medical Center	1997		1998		1999	
Offense	Reported	Cleared	Reported	Cleared	Reported	Cleared
Homicide	0	0	0	0	0	0
Rape	0	0	0	0	0	0
Attempted Rape	0	0	0	0	1	1
Sexual Offense – nonviolent	2	1	0	0	0	0
Robbery	0	0	0	0	1	0
Aggravated Assault	2	2	4	3	0	0
Burglary	19	0	14	2	10	1
Hate Crimes	1	1	0	0	1	1
Motor Vehicle Theft	17	13	12	0	14	2
Simple Assault	19	18	9	3	6	6
Theft (includes bicycles)	133	6	105	1	137	10
Vandalism	11	3	5	0	6	0
Drug/Narcotics Offenses	68	67	78	77	8	8
Weapons Offenses	16	16	9	9	0	0
Alcohol	39	39	61	61	5	5
Arson					0	0

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.

Salary and Employment Information

Field of Study	Degree Level of Graduates: Bachelor's	Master's	Doctorate
	Average Annual Salary *		
Arts	$ 26,433	$ —	$ —
Biological Sciences	29,047	34,453	45,679
Computer Science	44,649	51,438	58,688
Engineering	41,165	48,780	59,867
Humanities	27,861	31,153	32,500
Management	—	55,594	69,571
Physical Sciences	40,025	50,552	60,288
Social Sciences	28,608	30,010	43,030

* Source: A national survey conducted by the National Association of Colleges and Employers, representing the average range of offers as of September 1999 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 and Information Management in compliance with the Student Right-to-Know and Campus Security Act of 1990 (Public Law 101-542).

Gender and Ethnicity	Fall 1993 All Entering Freshmen: E^1	G^2	GR^3	Fall 1993 All Entering Athletically Aided Freshmen: E^1	G^2	GR^3
Men						
Nonresident Alien	19	13	68%	0	0	0%
African American	26	13	50%	0	0	0%
American Indian	2	2	100%	0	0	0%
Asian	607	439	72%	0	0	0%
Hispanic	147	86	59%	1	0	0%
Other/Unknown	47	30	64%	1	1	100%
White	245	186	76%	9	8	89%
Total	**1,093**	**769**	**70%**	**11**	**9**	**82%**
Women						
Nonresident Alien	19	10	53%	0	0	0%
African American	41	29	71%	5	4	80%
American Indian	5	3	60%	0	0	0%
Asian	665	550	83%	0	0	0%
Hispanic	225	161	72%	2	2	100%
Other/Unknown	69	49	71%	0	0	0%
White	250	192	77%	10	9	90%
Total	**1,274**	**994**	**78%**	**17**	**15**	**88%**
Total Entering Freshmen						
Nonresident Alien	38	23	61%	0	0	0%
African American	67	42	63%	5	4	80%
American Indian	7	5	71%	0	0	0%
Asian	1,272	989	78%	0	0	0%
Hispanic	372	247	66%	3	2	67%
Other/Unknown	116	79	68%	1	1	100%
White	495	378	76%	19	17	89%
Total	**2,367**	**1,763**	**74%**	**28**	**24**	**86%**

E^1 = Entered; G^2 = Graduated; GR^3 = Graduation Rate.

NOTE: UPHSS, Department of Education credential students, and visitors are excluded.

Source: OASIM Student Tracking System, 2-2000 updates.

Cumulative Graduation Rates by Intercollegiate Sport

Fall 1993 entering freshmen who received athletically related financial aid.

Entering Group	E[1]	G[2]	GR[3]	E[1]	G[2]	GR[3]
	MEN			WOMEN		
Basketball						
Nonresident Alien	0	0	0%	0	0	0%
African American	0	0	0%	3	2	67%
American Indian	0	0	0%	0	0	0%
Asian	0	0	0%	0	0	0%
Hispanic	0	0	0%	0	0	0%
Other/Unknown	0	0	0%	0	0	0%
White	0	0	0%	0	0	0%
Total	**0**	**0**	**0%**	**3**	**2**	**67%**
Track/Cross Country						
Nonresident Alien	0	0	0%	0	0	0%
African American	0	0	0%	1	1	100%
American Indian	0	0	0%	0	0	0%
Asian	0	0	0%	0	0	0%
Hispanic	0	0	0%	1	1	100%
Other/Unknown	0	0	0%	0	0	0%
White	0	0	0%	2	1	50%
Total	**0**	**0**	**0%**	**4**	**3**	**75%**
Other and Mixed Sports						
Nonresident Alien	0	0	0%	0	0	0%
African American	0	0	0%	1	1	100%
American Indian	0	0	0%	0	0	0%
Asian	0	0	0%	0	0	0%
Hispanic	1	0	0%	1	1	100%
Other/Unknown	1	1	100%	0	0	0%
White	9	8	89%	8	8	100%
Total	**11**	**9**	**82%**	**10**	**10**	**100%**

E[1] = Entered; G[2] = Graduated; GR[3] = Graduation Rate.

NOTE: UPHSS, Department of Education credential students, and visitors are excluded.

Source: OASIM Student Tracking System, 2-2000 updates.

Nondiscrimination Policy Statements

Student-Related Matters. The University of California, in accordance with applicable Federal and State law, University policy, and values, prohibits discrimination on the basis of race, color, national origin, religion, sex, disability, age, medical condition (cancer-related or genetic characteristics), ancestry, marital status, citizenship, sexual orientation, or status as a Vietnam-era veteran, special disabled veteran, or any other veteran who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized. 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: University of California, Irvine, Assistant Executive Vice Chancellor, Office of Equal Opportunity and Diversity, 524 Administration Building, Irvine, CA 92697-1125; telephone (949) 824-5594.

Employment Practices. The University of California, in accordance with applicable Federal and State law, University policy, and values, prohibits discrimination against or harassment of any person employed by or seeking employment with the University on the basis of race, color, national origin, citizenship, religion, sex, disability, age, medical condition (cancer-related or genetic characteristics), ancestry, or marital status. The University of California also prohibits discrimination on the basis of sexual orientation, status as a Vietnam-era veteran, special disabled veteran, or any other veteran who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized.

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 covered veterans. The University of California is committed to rectify discrimination patterns or practices which result in underutilization.

Inquiries regarding the University's equal employment opportunity policies may be directed to: University of California, Irvine, Assistant Executive Vice Chancellor, Office of Equal Opportunity and Diversity, 524 Administration Building, Irvine, CA 92697-1125; telephone (949) 824-5594.

About the Catalogue

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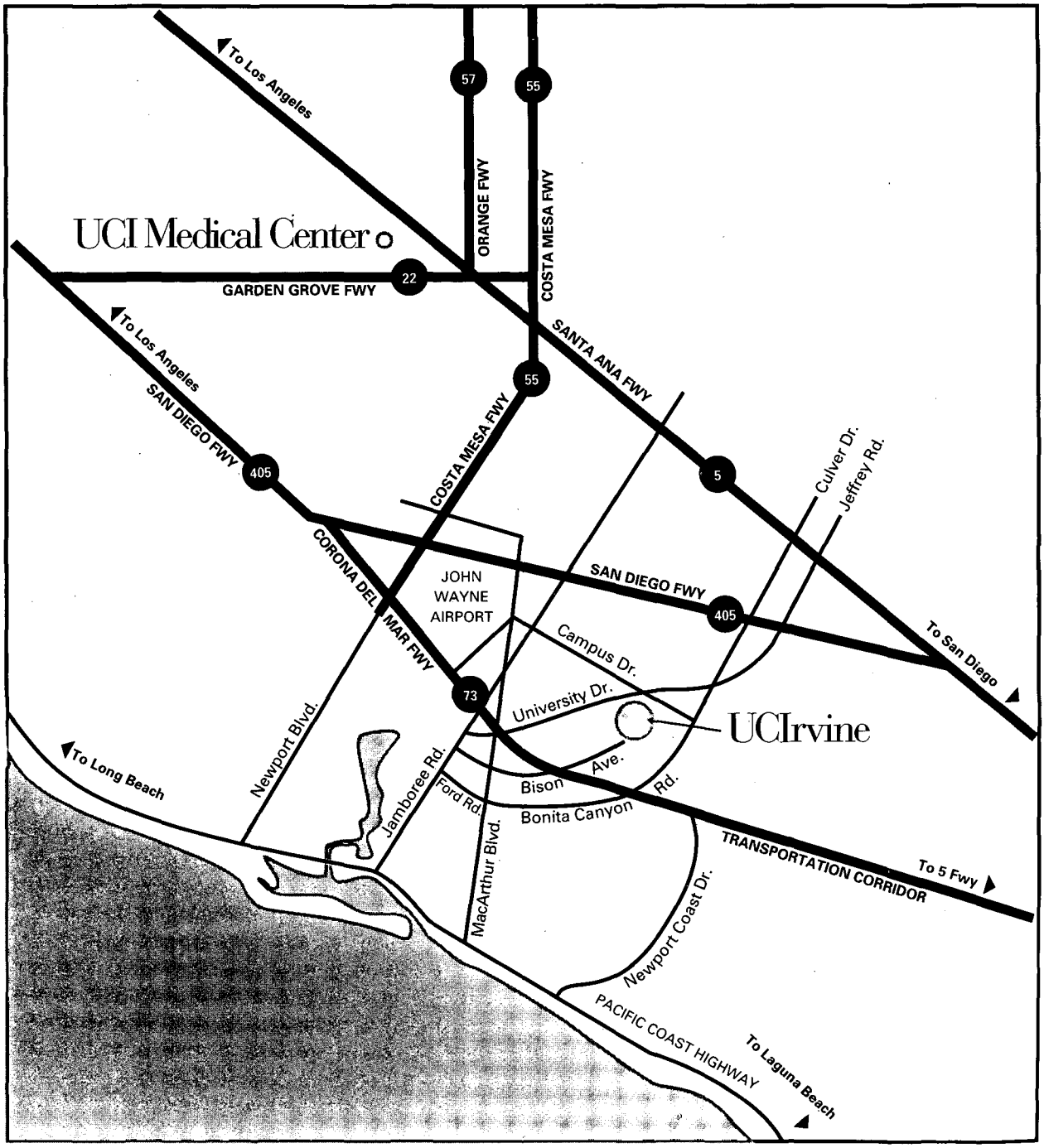

Directions to UCI

405 Freeway

From the South
Exit at Culver Drive
Left on Culver Drive
Right on Campus Drive
Left on East or West Peltason into UCI.

From the North
Exit at Jamboree Road
Right on Jamboree Road
Left on Campus Drive
Right on East or West Peltason into UCI.

5 Freeway

From the South
Take 5 North to 405 North
Exit at Culver Drive
Left on Culver Drive
Right on Campus Drive
Left on East or West Peltason into UCI.

From the North
Take 5 South to 55 South to 405 South
Exit at Jamboree Road
Right on Jamboree Road
Left on Campus Drive
Right on East or West Peltason into UCI.

73 Freeway

From the South
North on MacArthur Boulevard
Exit at University Drive
Right on University Drive
Right on California Avenue into UCI.

From the North
Exit at University Drive
Left on University Drive
Right on California Avenue into UCI.

55 Freeway

From the South
Take 405 South
Exit at Jamboree Road
Right on Jamboree Road
Left on Campus Drive
Right on East or West Peltason into UCI.

From the North
Take 405 South
Exit at Jamboree Road
Right on Jamboree Road
Left on Campus Drive
Right on East or West Peltason into UCI.

UCI Medical Center
101 The City Drive
Orange, CA 92868

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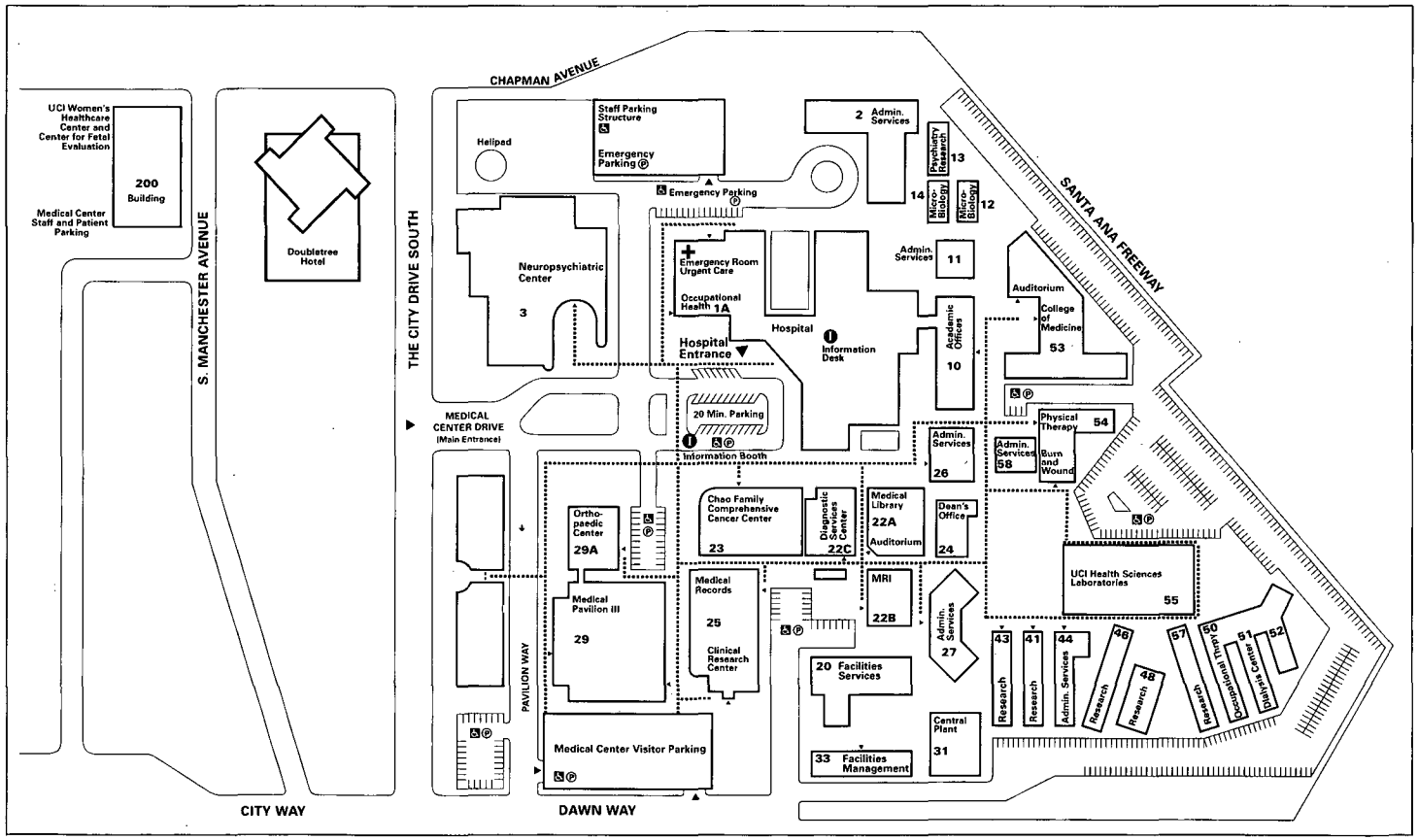

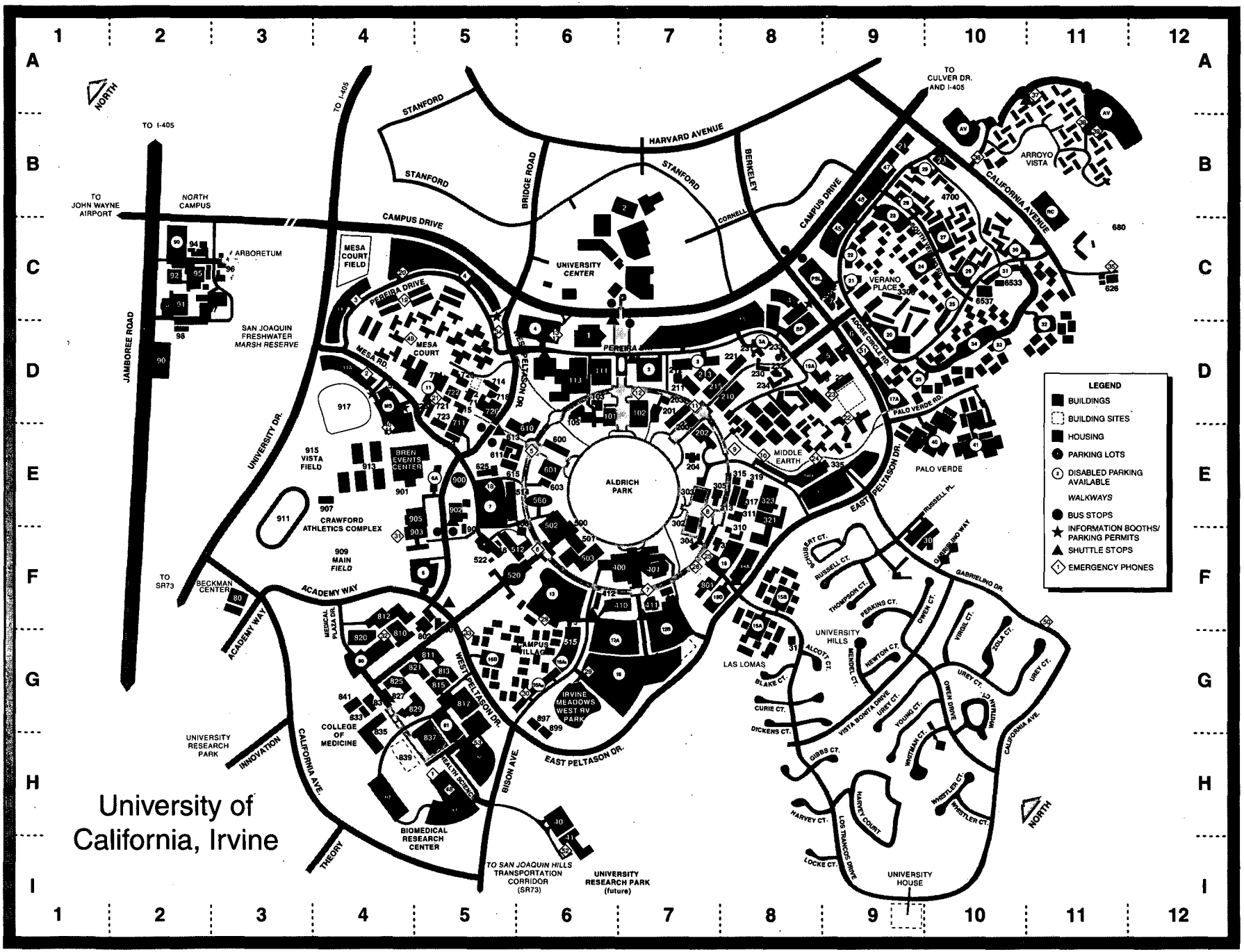

UCI Campus Map, April 2000.

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School of the Arts

School of Biological Sciences

Department of Education

Henry Samueli 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: (949) 824-5011
Speech and hearing impaired persons: TDD (949) 824-6272

World Wide Web: http://www.uci.edu/

Office	Location	Telephone (949)
Admissions		
College of Medicine	200 Medical Education Building	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 Student Center	824-BOOK
Campus Tours	204 Administration Building	824-6703
Career Center	100 Student Services I	824-6881
Dean of Students	UCI Student Center–First Floor	824-5181
Disability Services	100 Disability Services Building	824-7494
Financial Aid	102 Administration Building	824-8262
Housing	209 Administration Building	824-7247
International Center	201 Student Services I	824-7249
Registrar	215 Administration Building	824-6124
Student Health	Student Health Service	824-5304
Summer Session	UCI Extension	824-5493
Transfer Student Services	204 Administration Building	824-6703
UCI Medical Center	101 The City Drive Orange, CA 92868	(714) 456-6011
Veterans Services	100 Student Services I	824-6477
Vice Chancellor Student Affairs	405 Administration Building	824-7985

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