The 161-foot high Carillon Tower is a well-known landmark on UCR's 1,200-acre campus, located near the Box Springs Mountains on the eastern edge of Riverside. UCR was founded in 1907 as the Citrus Experiment Station and became a general University of California campus in 1959.
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Please note

Every effort has been made to ensure the accuracy of the information presented in the University of California, Riverside General Catalog. However, all courses, course descriptions, instructor designations, curricular degree requirements, and fees described herein are subject to change or elimination without notice. Students should consult the appropriate department, school, college, or graduate division for current information, as well as for any special rules or requirements imposed by the department, school, college, or graduate division.

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About this Catalog

Catalog Editor
Jeanne Boyer

Editor
Laura Heraty

Courses Coordinator
Cheri Schillreff

Editorial Assistant
Staci Scheiwiller

Photographers
Jeanne Boyer
Michael Campbell
Michael Capriotti
Bill Elledge
Henry Jones
Claudia Luke
Steve Walag
Timilie Woodruff

Cover Designer
Brad Rowe

Text pages printed on recycled paper.

Cover and inside photos by Steve Walag unless otherwise noted.

Front cover, clockwise from top left: Music student Jamila Ford, Political Science student Jennifer Pucher, Engineering student Azucena Rodriguez (Photo by Michael Capriotti), Biology student Denise Gentiles, and Biomedical student Benson Kuo.

Back cover: Commencement. Photos by Jeanne Boyer and Bill Elledge

University of California, Riverside USPS (650-920)

Published four times a year: monthly in February, May, June, and November by the University of California, Riverside, Riverside, CA 92521-0428. Periodicals postage paid at Riverside, CA.

Postmaster: send address changes to
Mail Services
University of California, Riverside
Riverside, CA 92521-0428

Volume 39 Number 3 June 2000
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1 Administrative Studies, and Law and Society are only offered as a major combined with other programs.
2 The degree in Anthropology/Ethnic Studies has been discontinued. Students working toward the degree (as well as readmitted students and transfer students accepted prior to Fall 1999) will be allowed to complete the degree requirements but must graduate by June 2001.
3 Applications are not accepted from students wishing to work toward the master’s degree only.
4 New student registration in this program is not open at present.
5 See Graduate School of Education section for credential program information.
6 Also joint programs with teaching fields of Anthropology, Biology, English, French, Geological Sciences, German, History, Mathematics, Music, Political Science, Psychology, Sociology, and Spanish.
7 New student registration in this program is not open at present. For further information, contact the Graduate Division.
8 Doctoral studies are available through the Ph.D. program in Comparative Literature.
9 The degrees Psychology and Sociology/Ethnic Studies have been discontinued. Students working toward these degrees (as well as readmitted students and transfer students accepted prior to Fall 2000) will be allowed to complete the degree requirements but must graduate by June 2002.
### Undergraduate Minors

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Welcome to the University of California, Riverside. Our campus cares about students — we are known for the individual attention conveyed to all of our undergraduate and graduate students alike. We are an outstanding university, with the finest faculty and facilities for teaching and research. UC Riverside is also a place where students can have fun, where relationships are easy to develop, and possibilities abound for having a good time.

Perusing this catalog will illuminate the vast array of disciplines, curricula, and majors and minors available at UC Riverside. These represent the research and teaching interests of our distinguished faculty, working at the cutting edge of their discipline. We encourage all of our students, undergraduate and graduate, to become involved in discovery, in the creation of new knowledge. Opportunities are available for students at all levels to work with faculty in their laboratories or offices, to publish papers, and to present results at professional meetings.

The commitment to involving our students in the learning process is evident in our undergraduate classes. Senior faculty teach our introductory courses. I teach freshman physics each winter quarter (PHYS 040A, General Physics, Mechanics). When you take courses from these faculty members, choose one whose interests and personality suit you, and ask if you can do research with him or her. You will find yourself welcomed into a meaningful experience which will involve you at the forefront of discovery.

We offer a number of distinctive undergraduate degree programs, ranging from Creative Writing to Business Administration to Computer Engineering to Biomedical Sciences, along with the more traditional degree programs found at most other colleges and universities. We also have a strong commitment to helping students complete their degree work in a timely manner. We offer the courses that students need to take to complete their degree objectives.

Students at UC Riverside have many chances to become involved and make a difference. We are proud of the nationally acclaimed University/Eastside Community Collaborative, and of our AmeriCorps Program (the only one in the University of California). Through both programs, UC Riverside students can mentor at-risk youth, giving them the positive direction they need to make improvements in their school work and lives. Our campus also has approximately 200 service clubs, student organizations, and recreational groups. Each offers our diverse student body the chance to make new friends, to have fun, and to be active while serving the campus and community.

If you find yourself with questions or concerns, take advantage of our faculty, administration, and staff. We are here to work with you as colleagues, to make sure that your experience at UC Riverside is the most enjoyable of your life. If you want to contact me directly, I am always available through e-mail [rayo@admin.ucr.edu], and through my office hours and “Rappin’ with the Chancellor” each quarter.

At UC Riverside, we offer you the highest quality education in a supportive community of faculty and staff who care about you and your success. That is my personal pledge, and the pledge of our faculty and staff as well. UC Riverside is a wonderful place, and a beautiful campus. These pages will enable you to discover our presence at the forefront of teaching, research, public service, and collegiate life. We hope you will join us and take part in the great tradition of our campus.

Chancellor Raymond L. Orbach discusses a physics problem with students.
PRINCIPLES OF COMMUNITY

The University of California, Riverside is a multicultural community of people from diverse racial, ethnic, and socioeconomic backgrounds; national origins; religious and political beliefs; physical abilities; and sexual orientations. The everyday interactions on this campus 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.

Implicit in this mutual respect is the right to live, study, teach, and work in an environment that is free from harassment or denigration on the basis of race, age, religious preference, gender, sexual orientation, or national origin. Any violation of this right — verbal or written abuse, threats, harassment, intimidation, or violence against person or property — will be considered a violation of the principles of community that are an integral part of the University of California’s focus, goals, and mission. Such behavior will be discouraged by the University to the full extent of its power.

THE UNIVERSITY OF CALIFORNIA

The University of California, composed of academic colleges, professional schools, divisions, departments of instruction, museums, libraries, research institutes, bureaus and foundations, and the University of California Press, is situated on the nine campuses throughout the state: Berkeley, Davis, Irvine, Los Angeles, Riverside, San Diego, San Francisco, Santa Barbara, and Santa Cruz. The University also maintains several field stations of the Agricultural Experiment Station in various parts of the state.

Governance. Under the state constitution, governance of the University is entrusted to the Board of Regents. The Regents appoint the President of the University, and with the President’s advice, the officers of the University. Among these are the vice presidents, the chancellors, and the directors of the major laboratories. The Regents also directly appoint the principal officers of the Regents: the general counsel, the treasurer, and the secretary. The Regents of the University of California and the administrative officers are listed in the back of this catalog.

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

Students participate in policy making at both the campus and University-wide levels.

UC RIVERSIDE

History and Development

Academic divisions of the University of California, Riverside include the College of Natural and Agricultural Sciences; the College of Humanities, Arts, and Social Sciences; The Marlan and Rosemary Bourns College of Engineering; the Graduate School of Education; The A. Gary Anderson Graduate School of Management; the Division of Biomedical Sciences; and the Graduate Division. The campus features the Citrus Research Center - Agricultural Experiment Station, Air Pollution Research Center, UCR/California Museum of Photography, Center for Social and Behavioral Science Research, Institute of Geophysics and Planetary Physics, Centers for Water and Wildland Resources and eight sites in the UC Natural Reserve System, including the Philip L. Boyd Deep Canyon Desert Research Center. The campus is also home to the regional headquarters of Cooperative Extension and a branch of University Extension, which includes Summer Sessions.

The roots of the campus date back to 1907 when the California State Legislature established the Citrus Experiment Station to conduct research on the agricultural problems of Southern California. Graduate work was conducted early in the station’s history, and today, graduate education is central to its mission.

In 1948 the Regents approved the establishment of the College of Letters and Science. Necessary legislation was passed by the Academic Senate in 1951, and the College opened for classes in February 1954. The Riverside campus was declared a general campus by act of the Regents in 1959, with a mandate to develop appropriate areas of study. In 1960, the Graduate Division was established and graduate and professional programs were added.
Dancers practice a move for UCR is Dancing.
The Campus

The 1,200-acre Riverside campus of the University of California is conveniently located approximately 50 miles east of Los Angeles within easy driving distance to most of the major cultural and recreational offerings in Southern California. In addition, it is virtually equidistant from the desert, the mountains, and the ocean.

The city of Riverside, with the UCR campus on its eastern edge, is accessible by several main highways. The nearby Ontario International Airport has daily flights to most of the nation’s major cities as well as connecting commuter flights to the Los Angeles International Airport. Metrolink train service is available to Los Angeles.

Adjoining the campus is University Village, a retail and office complex, a joint project between UCR, the city of Riverside, and a private developer. The project includes 10 theaters, some used during the day as UCR classrooms. UCR and other professional offices, restaurants, and retail shops are also part of the complex.

Enrollment at UCR is presently about 13,000, approximately 10 percent of whom are graduate students. The campus continues to expand, with a number of buildings being constructed or remodeled. These include academic settings such as laboratories, libraries, and performing arts studios, as well as housing and recreational facilities. Prominent features of the campus include the 161-foot carillon tower, the Botanic Gardens, and acres of citrus groves.

Accreditations

UCR 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. WASC is located at 985 Atlantic Avenue, Alameda, CA 94501, (510) 748-9001. In addition, the Biomedical Sciences Program is accredited by the Association of American Medical Colleges; the Bachelor of Science degree (or equivalent program) in Chemistry has been certified by the American Chemical Society as meeting its standards; the credential programs of the Office of Teacher Education Services are approved by the Commission on Teacher Credentialing; and the B.S. degrees in chemical, electrical, environmental, and mechanical engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

UNIVERSITY LIBRARY

Director: James C. Thomson, M.S.

The University Library is the focal point for research and study at UCR. The Library’s collections include 1,954,019 bound volumes, 13,023 serial subscriptions, and 1,619,452 microforms housed in four facilities: the Tomas Rivera Library (serving the humanities, arts, and social sciences), the Science Library, the Music Library, and the Media Library. The Library has the latest in information technology. INFOMINE is an innovative Internet Web index and search engine created by the library to provide easy access to electronic information resources throughout the world. The MELVYL Online Catalog is a computerized catalog connecting all nine UC campuses and can be used in the Library. In addition, UCR faculty, students, and staff can access MELVYL from home or office via personal computer and modem. MELVYL includes books, indexes to magazine, newspaper, and journal articles, as well as electronic access to the full text of many journals. The California Digital Library, a tenth library for the University of California, provides access to a variety of electronic resources at http://www.cdlib.org.

The Rivera Library is undergoing a seismic upgrade and remodel. During the academic year 2000-2001, the central section and the fourth floor of the library are closed for renovation. Library collections from those areas have been relocated. The north section of the library now houses Collection Development, Education Services, Government Publications, Reserve Services, and Library of Congress classifications B, E, F, and N. The south section of the library contains Circulation Services, the Copy Center, current newspapers and periodicals, Interlibrary Loans, microforms, Reference Services and collections, and Library of Congress classifications A, D, G, H, J, K, L, M, P, and T.

Current information on the renovation status and collection locations is available at http://library.ucr.edu/renovation.

- **Circulation Services** in all campus libraries are responsible for checking out materials, renewing materials, maintaining the collections, and providing information on the circulation status of library materials.

- **Education Services**—second floor of the Tomas Rivera Library—offers curriculum materials, textbooks currently in use in local schools, and a children’s literature collection to support the work of students in the Graduate School of Education’s teaching credential program.

- **Government Publications.** The University Library is a depository for both United States and California state government publications. The main collection, located in the Government Publications Department on the first floor of the Tomas Rivera Library, also contains documents from local and foreign governments and international organizations as well as extensive law resources. Census and other statistics, records of legislative bodies and judicial courts, social and economic studies, scientific investigations, reports of special commissions, and a myriad of electronic information sources in CD-ROM format can be found in the Department. The Science Library contains extensive collections of documents relating to the natural and agricultural sciences.

- **Interlibrary Loan Service** locates and borrows needed materials not held at the UCR Library. Staff at interlibrary loan offices in the Tomas Rivera Library and in the Science Library search nationwide to obtain volumes or photocopies of articles for faculty, staff, and students.

The Science Library’s collections of 450,000 volumes and 2,853 serial subscriptions support the life and physical sciences, including engineering, agriculture, and medicine.
• The **Media Library** — 1001 Humanities and Social Sciences, (909) 787-5609 — holds the University Library's collection of media. It includes a wide variety of entertainment and educational programs, as well as computer-assisted instruction programs. Films and tapes can also be rented from off-campus sources. With its audiovisual equipment and media collections, the Media Resources Library serves as a walk-in playback center for the campus community.

• The **Music Library** — Music Wing of Olmsted Hall, (909) 787-3137 — houses some 25,808 scores, 12,210 sound recordings, and 3,131 compact discs. These are played from high-fidelity sound equipment in the central control room to 36 listening stations. The Music Library is scheduled to relocate to the new Fine Arts Building by 2001.

• **Photocopying.** Photoduplication and microfilm copying services are provided in the Tomas Rivera and Science libraries. In addition, Copicard- (or coin-) operated copying machines are located on each floor of these libraries.

• **Reference Services.** Reference Librarians in the Rivera and Science libraries assist students, faculty, and staff in identifying and locating information and provide advisory services, including instruction in research strategies. All reference points offer either direct or mediated access to a number of electronic information sources. Questions may also be sent via e-mail to the Rivera Library (rivref@library.ucr.edu), the Science Library (sciref@library.ucr.edu), and the Music Library (musiclib@library.ucr.edu). At the invitation of faculty members, librarians offer students instruction in the resources and research strategies appropriate to the subject of the course during a regular class session. A credit course, HMSS 005 (Library Research Strategies), is also offered periodically.

• **Reserve Services.** Reserve services are offered in all libraries. Faculty members may place materials on reserve in support of their classes. Some reserve materials are also available at [http://library.ucr.edu/reserves](http://library.ucr.edu/reserves).

• The **Rupert Costa Library of the American Indian** — Special Collections Library, Batchelor Hall, (909) 787-3233 — consists of about 7,000 volumes and more than 9,000 documents, pamphlets, tape recordings, slides, and artwork. The Library is one of the most important collections of research materials relating to Native Americans in the United States and the world.

• The **Science Library** — (909) 787-2821 — is a prominent architectural structure featuring seating for 1,500 users, state-of-the-art information technology, and electronic reader stations. Its collections of 450,000 volumes and 2,853 serial subscriptions support the life and physical sciences, including engineering, agriculture, and medicine. The Map Room, with a collection of 91,244 maps and atlases, is located on the ground floor.

• The **Special Collections Library** — Batchelor Hall, (909) 787-3233 — houses rare books, manuscripts, and other unique or fragile materials. The J. Lloyd Eaton Collection of science fiction, fantasy, horror, and utopian literature comprises 65,000 volumes ranging from the seventeenth century to today. The Thomas Hardy and Ezra Pound Collections include printed and manuscript materials. Special Collections administers the University Archives and a portion of the Riverside Municipal Archive collection of civic documents, 1883-1953. Outstanding collections include the Sadakichi Hartmann Archive, the Heinrich Schenker Archive, part of the Oswald Jonas Memorial Collection, and collections on Paraguay, Paris, photography, B. Traven, local history, and national socialism.

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### COMPUTING & COMMUNICATIONS

**Interim Associate Vice Chancellor:** Charles Rowley, M.B.A.

**Contact department for location:**

(909) 787-4741; [http://www.cnc.ucr.edu](http://www.cnc.ucr.edu)


• **Academic Computing** — help desk (909) 787-3555; [helpdesk@ucr.edu](mailto:helpdesk@ucr.edu) — provides consultations and support for faculty desktop computer and networking needs. Consultants offer Instructional Technology (IT) support, which includes posting course materials on the Web, and assistance with statistical packages and other site license software. These services are available without charge to faculty.

• The **Center for Visual Computing** — (909) 787-5825; [info@cvc.ucr.edu](mailto:info@cvc.ucr.edu); [http://cvc.ucr.edu](http://cvc.ucr.edu) — provides a variety of visualization services ranging from high-end and three-dimensional animation, complete Web design and development, illustrations for course presentations and recruitment purposes, high-end slide and print output, film and paper scanning, in addition to multimedia CD-authoring capabilities. The Center also has trained consultants to assist users. It offers an ftp site to transfer computer files for direct output to slides or prints.

• **Communications Services** — (909) 787-4624; [dormtel@pop.ucr.edu](mailto:dormtel@pop.ucr.edu) — provides the data and voice communication needs for the campus. It provides telephone service and internet access in Aberdeen-Inverness, Lothian, and Pentland Hills residence halls and internet access in Stonehaven Apartments. A monthly charge is assessed for these services. Voice mail is also available for a monthly service charge. These services are ordered through C&C's main office.

• **Computing Support Services** — help desk (909) 787-3555; [helpdesk@ucr.edu](mailto:helpdesk@ucr.edu) — includes Academic Computing Support for faculty research and instruction, the Microcomputer Support Group (MSG) for desktop support, and the Help Desk. Consultants provide walk-in, telephone, or on-site consulting on hardware, software, and networking, plus assistance with loading, learning, and using stand-alone and networked microcomputers. Both instructor-led training workshops and self-paced training coursework on the Web or on CDs are available for faculty and staff. MSG also facilitates the Microcomputer Support Specialist program, which provides decentralized departmental support.

• **Media Resources** — (909) 787-3041 — supports five areas: Distance Learning; the Media Library; Media Production, which consists of Video and Photographic Services; Media Services, which provides classroom equipment; and Engineering and Technical Support, which services existing equipment and recommends equipment for new campus buildings.

• **Student Computing Services** — (909) 787-3867; [helpdesk@student.ucr.edu](mailto:helpdesk@student.ucr.edu); [http://www.cnc.ucr.edu/scs](http://www.cnc.ucr.edu/scs) — provides microcomputer facilities and services for currently enrolled UCR students. All equipment available and operating hours are posted on the Web site. Student Computing Services is part of Academic Computing. Microcomputers are available in computer facilities in Watkins Hall, the A. Gary Anderson Graduate School of Management, Olmsted Hall, Sproul Hall, and Humanities and Social Sciences Building Macintosh Lab. The Student Alpha Server is the e-mail server for undergraduate students and is a Sun Enterprise 150 running SunOS V5.5.1 operating system.
The Sweeney Art Gallery is located across from the main UCR campus. Its exhibitions, publications, educational programs, and collections form one of the most public faces of the Riverside campus.

The Art Gallery, open since 1963, develops and presents exhibitions of contemporary and historical works of art. Approximately ten exhibitions are mounted each year, along with a changing exhibition space dedicated to the display of the Permanent Collection. The Fall 2000 line-up begins in September with an exhibition of internationally renowned painter and UC Berkeley faculty member Squeak Carnwath, followed in November by a solo show of Lynn Hershman, one of the most recognized and prolific artists working with interactive media technologies. Three one-person shows of contemporary artwork will be held in the winter and spring as part of the continuing Projects Series 2001. A six-person group show, Self-Experienced, curated by Kevin Jon Boyle of the California Museum of Photography, will open in Winter 2001, and Shorts from the Wall: Posters and Photographs Brought Back from the Spanish Civil War by American Volunteers is scheduled for Spring 2001. The final show of the year is the annual Senior Thesis Art Exhibition, showcasing the artwork of graduating seniors in the Department of Art.

The Art Gallery’s responsibilities include the interpretation, preservation, and collection of works of art for the education and enjoyment of students, faculty, staff, and the community. In addition, the Art Gallery produces publications, offers symposia, lectures, artist’s receptions, and other events that relate to its exhibitions and to contemporary art issues. Most events at the Gallery are free and open to the public.

The Art Gallery also functions as a laboratory for training future museum professionals. Working with faculty members from various academic departments, the Art Gallery offers special courses and internships on topics ranging from public relations to art-historical research to exhibition installation. Additionally, by presenting the annual senior thesis exhibition, the Gallery provides an initial display venue for student artists in the Department of Art. Employment opportunities exist for students at the Gallery, and student volunteers are always welcome.

For program information, or to inquire about job, internship, or volunteer opportunities, call (909) 787-3755. The Gallery also offers membership to students at a reduced rate. Get the latest exhibition information at http://sweeney.ucr.edu.
Media Library — 1001 Humanities and Social Sciences — stores the University Library's collection of films, audio and video cassettes, and other media materials for the campus. The Media Library serves as a walk-in playback center for all these materials as well as for items placed there on reserve. VHS, Beta, U-Matic, laser disc, DVD, and audio cassette equipment are available for use by patrons. This unit also orders rental films and videos for instruction. Hours: 8 a.m. to 8 p.m. weekdays (Fridays until 5 p.m.); 7 a.m. to 5 p.m. weekends.

Media Services — B221 Sproul — provides audiovisual equipment for instruction and special events. Hours: 8 a.m. to noon and 1 p.m. to 5 p.m. weekdays.

Video Production and Photographic Services are responsible for creating new media materials in consultation with faculty, the administration, or other patrons. The units are located at two sites: Video, audio, multi-image, and film production services are in B221 Sproul; Photographic Services is in B110 Hinderaker Hall. Hours: 8 a.m. to noon and 1 p.m. to 4:30 p.m. weekdays.

RESEARCH PROGRAMS AND RESOURCES

Research Centers and Institutes

The history of the Riverside campus dates back to the Citrus Experiment Station with its mission to research agricultural problems. Today, research is conducted by the Citrus Research Center-Agricultural Experiment Station (CRC-AES) on more than 230 crop commodities. The Center's projects cover a broad and diverse number of topics that emphasize not only the research itself but also its applicability in solving various agricultural problems. Research results are disseminated to other scientists, farmers, and the public.

The CRC-AES and other centers at UCR are described in the following sections.

Agricultural Research Institute for Deserts

Director: Michael E. Stanghellini, Ph.D.
2348 Fawcett Laboratory
(909) 787-3407; fax (909) 787-4294
michael.stanghellini@ucr.edu; http://www.arid.ucr.edu

The Agricultural Research Institute for Deserts promotes interdisciplinary research, service, and educational programs on sustainable and integrated practices that enhance the long-term viability of desert agriculture. Desert agriculture encompasses both production and aesthetic/amenity interests, and includes the relationship of agriculture to the environment and natural resources.

Air Pollution Research Center

Director: Roger Atkinson, Ph.D.
201 Fawcett Laboratory
(909) 787-5128; fax (909) 787-5004
http://cnas.ucr.edu/~aprc/aprc.html

The Air Pollution Research Center was established as an organized research unit on the Riverside campus in 1961. Its principal mission is to conduct fundamental and applied research in atmospheric science. These studies include such phenomena as biogenic or anthropogenic emissions, physical and chemical removal and transformation processes, and effects of chemicals and particles emitted or formed in the atmosphere on human health, vegetation, soil and water systems, and visibility.

Present research concerns: mechanistic and kinetic studies of the photoysis and reactions of small molecules of atmospheric interest using molecular beam and discharge flow techniques; laboratory studies of gas-particle conversion using a particle beam-mass spectrometer system; investigations of the kinetics, products, and mechanisms of the gas-phase reactions of organic compounds emitted from anthropogenic and biogenic sources with hydroxyl (OH) radicals, nitrate (NO3) radicals, and ozone (O3); the development of detailed chemical mechanisms for use in computer models to investigate the formation of ozone and other components of photochemical air pollution; investigation of the mutagenicity of atmospheric reaction products of polycyclic aromatic hydrocarbons using human cell lines; and studies of the effects of ozone on agricultural crops.

Center for Asian Pacific America

Director: Deborah Wong, Ph.D.
1422 Omlsted Hall
(909) 787-3726; deborah.wong@ucr.edu

The Center for Asian Pacific America (CAPA) supports research in Asian American studies in the broadest sense. Faculty involved with CAPA have identified sites of common interest and inquiry from the divergence of an array of fields. A current focus is the arena of public culture, including such diverse topics as Asian American political life, the changing sociological landscape, the renaissance of expressive culture, and the increasing hegemony of media representation and its self-referentiality.

Center for Bibliographical Studies

Director: Henry L. Snyder, Ph.D.
2338 Omlsted Hall
(909) 787-5841; fax (909) 787-4120
http://www.cbis.ucr.edu/cbmsmain.html

The Center for Bibliographical Studies was founded to encourage and support research and publication by faculty and students in bibliography and the history of the book. It is based upon two internationally renowned programs.

The English Short Title Catalog (EngSTC) is a landmark national bibliography. A reference and research tool of unprecedented power and versatility, it is the largest cooperative bibliographic project ever attempted. It is based upon the Eighteenth-Century Short Title Catalogue (ESTC) which is designed to record every item within its scope published in Great Britain or its dependencies in the eighteenth century in a machine-readable, on-line file. In 1987, it was extended backwards in time to 1475, thus becoming the EngSTC.

The California Newspaper Project (CNP) is the state segment of the United States Newspaper Project, a national effort to record the surviving issues of all newspapers published in the United States in the national serials database. In addition to creating a union list of U.S. newspapers in California repositories, the CNP also conducts an extensive preservation program to insure that representative runs of California titles are available for use by future generations.

Center for Bio/Technology

The Center for Bio/Technology focuses faculty research strengths in agriculture, environmental science, biomedical science, and informatics that could be used to create or utilize new technology. Faculty from the College of Natural and Agricultural Sciences and the College of Engineering also work with local industry, venture capitalists, and Inland Empire educational institutions to improve the biotech infrastructure in the region and to enhance K-12 teacher training and student education. The Center for Bio/Technology is under the direction of the Office of Intellectual Property Services, in the Office of the Vice Chancellor, Research.
Center for Conservation Biology

Director: Michael Allen, Ph.D.
(909) 787-5484; http://www.ccb.ucr.edu

The Center for Conservation Biology assists in the conservation and restoration of species and ecosystems by facilitating collection, evaluation, and dissemination of scientific information. The Center identifies new and existing research priorities in conservation biology and inaugurates new research programs. Many activities of the Center are regional, centered on the diverse species and habitats that form the natural heritage of Southern California, but other activities extend far beyond this focus. The research and other work of the Center provide cultural, economic, and aesthetic benefits locally and globally.

The Center was created in response to increasing pressure related to endangered species, habitat loss and fragmentation, and challenges regarding public use or development of lands. The Center employs partnerships with local and national government agencies, private sector interest groups, and the University to address natural resource management issues. Resolution of many of the biological resource management issues that confront Riverside County, the state of California, and the nation must ultimately rest on the intersection of sound science and wise public policy. The Center fulfills its “honest broker” role by providing the sound science on which good public policy decisions can be based.

Center for Environmental Research
and Technology

Director: Joseph M. Norbeck, Ph.D.
1200 Columbia Avenue
Riverside, CA 92507
(909) 781-5791; fax (909) 781-5790 info@cert.ucr.edu
http://www.cert.ucr.edu

The College of Engineering’s Center for Environmental Research and Technology (CE-CERT) is one of California’s premier facilities for research into air pollution control and energy efficiency. The laboratory has established itself as an “honest broker” trusted by industry, government, and the academic community to develop and assess environmental technologies and strategies.

CE-CERT has eight major research fields:

- **Advanced Vehicle Engineering** concentrates on advanced fuel, engine, and drivetrain systems for cleaner and more energy-efficient transportation.
- **Atmospheric Processes** studies the transformation of air pollutants after they are emitted into the atmosphere.
- **Environmental Modeling** performs theoretical evaluations of present and future urban and regional air quality.
- **Environmental Policy Analysis** studies the practical implications of air quality regulations and technologies.
- **Renewable Fuels and Solid Waste Management** develops and evaluates technologies for converting waste into high-quality, cost-competitive fuels.
- **Stationary Sources of Air Pollution** develops new technologies, processes, and controls that reduce emissions.
- **Transportation Systems Research** develops tools for more efficient transportation and better modeling of vehicle emissions.
- **Vehicle Emissions Research** studies energy and environmental impacts of advanced emission controls and reformulated and alternative fuels.

The research agenda provides a forum for undergraduate, graduate, and postdoctoral students to investigate technologies, fuels, and regulatory strategies with recognized experts in these fields. Results of research projects are published in scientific journals, Society of Automotive Engineers publications, or proceedings of CE-CERT’s periodic World Car Conferences.

Center for Exotic Pest Research

Director: Michael Rust, Ph.D.
michael.rust@ucr.edu
http://cnas.ucr.edu/~cnas/centers/cepr.html

Entomologists, botanists, biologists, nematologists, and plant pathologists from UCR head up collaborative efforts with other UC scientists as well as with state and federal government researchers to define and implement critical research on pests introduced into California that present risks to public health and economically important plants. Exotic pests currently causing the state billions of dollars in property and crop damage and in control efforts each year are the Formosan termite, the red imported fire ant, the Africanized honey bee, the glassy-winged sharpshooter, and the avocado thrips. The Center seeks to develop a systematic methodology for dealing with exotic pests and diseases through risk assessment, early detection, rapid development of control or eradication measures, and the exploration of transgenic biological manipulations.

Center for Family Studies

Director: Ross D. Parke, Ph.D.
Olmsted Hall, 3rd Floor
(909) 787-3655; ross.parke@ucr.edu
http://www.chass.ucr.edu/csbsr/family.html

The Center for Family Studies was established in 1991 to create an interdisciplinary context devoted to research and dissemination of new advances in knowledge about the contemporary family. The goals of the Center are focused on significant advances in family theory, research, and treatment requiring an interdisciplinary approach to family issues. A variety of disciplines including anthropology, education, history, sociology, and psychology are represented in the Center.

Families in the United States are undergoing rapid changes in structure and composition, and there is a need to understand and document these changes. Demographic shifts across historical time are often treated independently of family process issues. By providing a forum for an
interdisciplinary dialogue the interplay across different levels of analysis can be more clearly understood.

A central mission of the Center is understanding the role of ethnic variation in families. The diverse population of Southern California represents a unique opportunity to explore this issue. A primary goal is to develop a research and policy agenda for family issues as the twenty-first century approaches. Collaborative arrangements with other institutions, such as local school districts and treatment facilities, have been established to facilitate research and to aid in defining policy priorities. Finally, through conferences, symposia, and workshops, the Center disseminates recent advances in knowledge about families to both scholarly and professional communities. Student participation in research and dissemination activities is encouraged.

Center for Ideas and Society

Director: Emory Elliott, Ph.D.
227 Highlander Hall C
(909) 787-3987; fax (909) 787-6377; ideassoc@citrus.ucr.edu
http://www.ucr.edu/HSS/centers/ideassoc.html

The Center for Ideas and Society was established in 1989 to promote and advance humanistic research and study at UCR, as well as nationally and internationally. The Center is especially interested in examining objects of inquiry from multiple perspectives; it wishes to promote more robust and nuanced understandings of topics than traditional disciplinary vocabularies, categories, and self-descriptions may permit. The Center also differs from other humanities research centers and institutes in the importance it attaches to intellectual history and social thought as the defining foci of its activities and programs.

The Center discharges its research mission in several ways: by providing resident fellowships for UCR faculty and advanced graduate students; by appointing Distinguished Visiting Faculty Fellows; by sponsoring, developing, and hosting conferences, lectures, workshops, and colloquia; by funding collaborative research groups through the Focused Research Project program; and by encouraging any other means which appropriately assist and enhance UCR humanists' research capabilities and achievements.

The Resident Fellowship Program is at the heart of the mission of the Center. The program brings together a group of scholars from several disciplines to investigate a humanistic topic collaboratively and examine areas of common interest.

Each quarter, four UCR faculty are awarded Resident Fellowships to support their research. Normally, these fellows are selected from the College of Humanities, Arts, and Social Sciences; however, when appropriate, fellowships have been awarded to applicants from other colleges and schools at UCR.

Center for Research in Intelligent Systems

Director: Bir Bhanu, Ph.D.
8232 Bourns Hall
(909) 787-3954; fax (909) 787-2425
http://www.cris.ucr.edu

The Center for Research in Intelligent Systems (CRIS) promotes interdisciplinary research for developing computer systems that are flexible, adaptive, and intelligent. The ultimate goal of the Center is the research and development of autonomous/semiautonomous systems with sensing capabilities that are able to communicate and interact with other intelligent (biological and artificial) systems. These intelligent systems will be able to perform tasks that require understanding the environment through knowledge, learning, reasoning, and planning. Advancements in each of the many enabling technologies required represent a major challenge and will have great impact on a wide range of applications, such as autonomous navigation, manufacturing, robotics, photointerpretation, space exploration, document understanding, remote sensing, human-computer interaction, environmental monitoring, image communication, digital libraries, data mining, management, economics, and health care.

CRIS involves an interdisciplinary team of UCR faculty members from seven departments (Electrical Engineering, Computer Science, Psychology, Economics, Statistics, Mathematics, and Management). This collaboration encourages greater understanding and broader perspectives than is possible within a single department. CRIS will advance the education and research goals of the university through an interdisciplinary graduate program and collaborative research in the intelligent systems area.

Center for Social and Behavioral Science Research

Director: Max Neiman, Ph.D.
3620 Humanities and Social Sciences
(909) 787-2196; max.neiman@ucr.edu
http://www.chass.ucr.edu/csbr/csbr.html

The Center conducts investigation in a broad range of disciplinary and interdisciplinary fields and brings together groups of scholars to build projects of common interest. The Center's core research focuses on policy evaluation of issues related to the cultural, social, political, and environmental conditions that affect the inhabitants of the United States. Current projects deal with immigration, inequities in digital access, competition among local governments for economic development, citizen support and opposition to the privatization of public services, policy making for residential development controls, and the public's evaluation of public services through the Inland Empire Annual Survey.

Center for Social and Economic Policy

Director: Richard Sutch, Ph.D.
2308 Humanities and Social Sciences
(909) 787-4365; fax (909) 787-3921
http://www.csep.ucr.edu

The Center conducts policy analysis and research using quantitative, historical, and social scientific approaches. One of the goals of the Center is to bring the expertise and nonpartisan perspective of the University's faculty to the service of policy making, the news media, and the public. It will also assist faculty in integrating policy analysis into courses and to teach students the basics of good policy analysis. The Center also provides access for faculty and graduate students to large-scale longitudinal and historical data collections relevant to social and economic policy concerns.

Citrus Research Center and Agricultural Experiment Station

The Citrus Research Center and Agricultural Experiment Station (CRC-AES) is a branch of the University's Statewide Agricultural Experiment Station, the nation's largest land-grant experiment station and the research arm of the University's Division of Natural and Agricultural Sciences, headquartered in Oakland. The CRC-AES is the outgrowth of a lobbying effort launched by Riverside citrus growers in 1899 under the community leadership of pioneer orange grower John Henry Reed, who is recognized as its founder. The Citrus Experiment Station — as it was first known — began operations in 1907 on a small site at the foot of Mount Rubidoux, where its original research emphasis was on citrus and subtropical horticulture.

In 1914, the Regents of the University approved expansion of the Experiment Station, and a new site was purchased at the base of the Box Springs Mountains, where the UCR campus lies today. The corridors of the earliest buildings on the site, first occupied in 1917, are rich in asso-
ciations with pioneer scientific discoveries and the early researchers who made them. Today these headquarters buildings are marked by a Riverside County Historical Landmark plaque.

Over the years, research of the Experiment Station was expanded to cover a variety of fruit, vegetable, field, and industrial crops grown in Southern California. In 1961, the original name of the Experiment Station was changed to the Citrus Research Center and Agricultural Experiment Station to reflect the increasingly broader scope of research.

The mission of the CRC–AES and Cooperative Extension (see separate listing) is to:

- Discover and advance knowledge in the agricultural and environmental sciences,
- Provide leadership in the dissemination and application of research-based knowledge to the people of California, and
- Provide opportunities for education and preparation of tomorrow’s leaders in agricultural and environmental sciences.

Today the major programmatic strengths of the CRC–AES are in plant sciences, pest and disease management, invasive species research, and environmental and natural resource science.

Emphasis within the CRC–AES is placed on innovative research leading to development of new technologies, such as those involving recombinant DNA and other genetic engineering techniques. Collaborations of CRC–AES researchers have created research centers focusing specifically on desert agriculture and exotic pests. Interdepartmental graduate programs in Plant Genetics, Microbiology, Environmental Sciences, and Environmental Toxicology also reflect the collaborative approach of CRC–AES researchers. Each of these programs consists of a team of UCR scientists whose research interests are closely linked.

The research staff of the CRC–AES consists of 100 scientists who are engaged in studies of fundamental problems of cellular and molecular biology, plant and invertebrate animal ecology, and basic aspects of plant breeding, culture, and protection. Most of the research staff teach both undergraduate and graduate students in the College of Natural and Agricultural Sciences. Their familiarity with current research problems and solutions strengthens academic programs and provides instruction and training for approximately 480 students in 22 graduate programs.

The CRC–AES and the College of Natural and Agricultural Sciences together maintain 1,720 acres of land for agricultural research. This includes 420 acres immediately adjacent to the campus, 760 acres at the Moreno Ranch field station, and 540 acres in the Coachella Valley. The regional office of Cooperative Extension is also located on the UCR campus. CRC–AES scientists, in carrying out their research tasks, work closely with the 15 Cooperative Extension offices in the Southern Region, campus-based specialists, and regional county advisors to ensure a continuous flow of information from research programs to the public, the agricultural industry, and students.

Costo Historical and Linguistic Native American Research Center

Director: Clifford E. Trafzer, Ph.D.
7708 Humanities and Social Sciences
(909) 787-5401 x1974; cliffo t.trafzer@ucr.edu
http://www.chass.ucr.edu/cssr/costo

The Costa Center seeks to advance scholarship in Native American Studies, with a particular focus on California Indians and native peoples of the Pacific Rim. The Center builds on the expertise of faculty from several departments and the unique resources of the Rupert Costa Library of the American Indian, a special collection housed at UCR.

Ernesto Galarza Public Policy and Humanities Research Bureau

Director: Carlos Vélez-Ibáñez, Ph.D.
3609 Humanities and Social Sciences
(909) 787-2196; cvelez@mail.ucr.edu
http://www.chass.ucr.edu/csbsr/galarza.html

The Ernesto Galarza Research Bureau supports and conducts research on relevant public policy issues and the consequences they hold for Latinos and other underrepresented communities in the United States. It focuses on policy research in three main areas — transnational processes, immigration and migration, community emergence and development — and representations in art, music, theater, and media.

Institute of Geophysics and Planetary Physics

Interim Director: Stephen K. Park, Ph.D.
(909) 787-4501; magneto@ucrmnt.ucr.edu
http://cnas.ucr.edu/~igpp/home.html

The Institute of Geophysics and Planetary Physics (IGPP) is a multicampus research unit, established in 1967, that promotes basic research at UCR into the structure, origin, and evolution of the universe. In pursuit of this mission, IGPP research extends from the earth’s core to the far reaches of space. Interdisciplinary research by faculty and students of the colleges of Natural and Agricultural Sciences and Humanities, Arts, and Social Sciences focuses on the areas of astrophysics, space physics, solid earth geophysics, geochemistry, archeometry, and tectonophysics.

The specific emphases at UCR vary with time as the interests of the faculty change, as new faculty are added, and as the science advances. Integral to IGPP research projects is the development of the new technologies, such as high resolution gamma ray telescopes for astrophysics research, development of the capacity to simulate the extreme pressures and temperatures of the earth’s lower mantle for mineral physics and tectonophysics experiments, alternate thermonuclear fusion technologies, and enhancement of radiocarbon dating techniques for archeology and paleoenvironmental analysis.

Research in experimental and theoretical space and astrophysics includes imaging high-energy space data to the properties of cosmic gamma ray bursts, active galactic nuclei, pulsars, supernovae and other discrete sources gamma rays; experimental and theoretical studies of the earth’s magnetosphere; measurements of neutrons and gamma rays produced in the earth’s atmosphere and the sun; and ground-based measurements of very high-energy gamma rays.

Solid-earth research includes a wide range of geophysical, geological, and geochemical investigations. A program initiated in 1993 involves studies of flow and phase transformations in the earth’s deep interior. Apparatus capable of deformation of rocks to pressures of 250,000 atmospheres and 3,000º centigrade are used to investigate the physical mechanism of deep earthquakes, the mechanisms of flow of partially molten mantle upwelling beneath oceanic ridges, and the rheology of the mantle transition zone and lower mantle. Geophysicists using electromagnetic methods to probe the roots of mountain ranges are studying how these ranges form. This research has led to the surprising result that the southern Sierra Nevada are underlain by partially molten mantle, which buoys up the range, producing the high elevations at Mount Whitney. Current research on the Himalayas and mountains in central Asia is unraveling the processes by which continental crust forms and deforms. An integrated program of field geophysics includes heat flow, gravity, active and passive seismic measurements, and electrical and magnetic methods. Research on earthquakes includes studies of the structure and physical properties, and field studies of earthquake phenomena. Additional studies encompass geothermal exploration, groundwater studies, fault zone characterization, and regional tectonics.
Research in Quaternary geochronology involves both radiocarbon (¹⁴C) and amino acid racemization dating with an emphasis on the research in the dating of bone samples as well as studies to extend the ¹⁴C time frame in excess of current conventional limits of about 30,000 years. Portions of the ¹⁴C research are being conducted in conjunction with the University of California, Lawrence Livermore National Laboratory Accelerator Mass Spectrometry Laboratory. These geochronological studies are being applied to problems in the dating of the emergence of anatomically modern Homo sapiens in the Old World and the timing of the arrival of human populations in the Western Hemisphere.

One dimension of the IGPP is the electron microscopy facility housed in Bourns Hall. It is part of a $1.7 million project funded jointly by UCR and the National Science Foundation to acquire state-of-the-art transmission and scanning electron microscopes. The microscopes, installed in January 1996, function with the campus Center for Visual Computing to provide microvisualization at the frontier of physical and biological sciences.

Another dimension of the IGPP is the ElectroMagnetic Studies of Continents (EMSO) Consortium founded by UCR, the University of Washington, and the University of Utah, with help from the National Science Foundation. This consortium manages a pool of electromagnetic instruments for geophysical studies that are conducted by researchers across the country [see http://vortex.ucr.edu for details].

The IGPP has other branches on the Los Angeles and San Diego campuses and at the Los Alamos National Laboratory and Lawrence Livermore National Laboratory.

Robert Presley Center of Crime and Justice Studies

Director: Robert Nash Parker, Ph.D.
2159 College Building South
(909) 787-2196; robnp@aol.com
http://www.chass.ucr.edu/csbsr/presley.html

The Robert Presley Center of Crime and Justice Studies was formed on the Riverside campus after being approved by the Regents in January 1994. The Center succeeds the former Robert Presley Institute of Corrections Research and Training. The Center’s guiding purpose is to generate knowledge essential for the formation and implementation of effective crime prevention and control policies. To that end, the Center encourages and facilitates research in the social sciences on basic as well as policy-related questions regarding justice, legal concepts and processes, social deviance and control, and research strategies for addressing such questions.

Center research initiatives and related activities such as special conferences and workshops are undertaken in consultation with state and local corrections and law enforcement representatives, as well as faculty and researchers in other higher education institutions. A particular concern is the systematic and ongoing evaluation of both established and experimental policies and programs. Among studies currently under way or in the planning stage are investigations of the impact of imprisonment on female inmates and their families, child and spousal abuse in relation to criminal violence, community development and early childhood intervention strategies for preventing delinquency, and the impact of programs aimed at improving police-community relations.

UC Centers for Water and Wildland Resources

Director: John Letey Jr., Ph.D.
john.letey@ucr.edu
http://cnas.ucr.edu/~cnas/centers/cwwr.html

The UC Centers for Water and Wildland Resources is a Universitywide unit comprising the Water Resources Center, Wildland Resources Center, Salinity and Drainage Research Program, and Water Quality Program. The Centers are headquartered at the Riverside campus. The Salinity and Drainage Research Program and Water Quality Program are coordinated from the Riverside office, and the remaining programs are coordinated from the Davis campus. The Centers support research, extension, and educational activities on a broad spectrum of water and wildland resource topics.

UC Institute for Mexico and the United States (UC MEXUS)

Director: Juan Vincente Palerm, Ph.D.
3324 Olmsted Hall
(909) 787-3519; fax (909) 787-3856; ucMexus@ucra1.ucr.edu
http://www.ucr.edu/ucmexus/index.html

California maintains an important and complex relationship with Mexico. Mexico has become a dynamic, influential, and unpredictable neighbor, and the Mexican-origin population is the largest ethnic minority group and the fastest-growing population in California’s society.

With the advent of the North American Free Trade Agreement, border industrialization, and increasing trade, California and Mexico are integrating rapidly. Individually and jointly, they are key players in the economic, social, and political associations of the Pacific Rim countries. Understanding and explaining the California–Mexico connection is critical to assuring a prosperous future for the people of the region.

UC MEXUS was established in 1980 to focus the resources of the nine campuses of the University of California as they relate to Mexico, United States–Mexico relations, Mexicans and Mexican descent in the United States, and a wide variety of cultural and scientific issues of importance to both countries. The Institute’s Universitywide headquarters were located at the Riverside campus in 1984. As a multicampus research unit that serves the entire UC system, UC MEXUS contributes to many Riverside campus interests in Mexican and Chicano topics through sponsorship of research, guest lecturers and performances, conferences, and its photographic and videotape collections, some of which are housed in the Media Library.

More than 400 University of California faculty members participate in the programs of UC MEXUS. Competitive grants fund faculty and graduate student research, publications, binational collaboration, and other innovative and creative work. The Institute hosts Mexican researchers and serves as a center for interdisciplinary, intercampus, and international projects in a wide variety of subjects. Current research foci involving UCR faculty include the diverse topics of agricultural labor and California’s rural communities, the border environment and shared resources such as geothermal energy and water, tropical resources and conservation programs, and Chicano theater.

Women in Coalition Research Center

Director: Devra Weber, Ph.D. (909) 787-5401, x1874
Associate Director: Piya Chatterjee, Ph.D. (909) 787-5219
http://www.chass.ucr.edu/csbsr/women/index.html

The Women in Coalition Research Center seeks to draw into dialogue and mutually beneficial projects women in grassroots organizations, non-governmental organizations and educational institutions throughout the world and from under-represented communities within the United States. The center is committed to cross-discipline cooperation in such areas as women’s rights and human rights, economic and political empowerment, feminist forms of community organizing and leadership, the arts, humanities, social sciences, health, and sciences. The Center’s primary goal is the promotion and production of knowledge about women’s efforts to ameliorate conditions of everyday life for themselves, their kin, and their communities as this knowledge is developed collaboratively across national, eth-
nic, economic, political, and racial divides. Activities include conferences, seminars, public performances and exhibitions, scholar/community intellectuals-in-residence programs, and public lectures.

**Additional Research Resources**

**Botanic Gardens**

Director: J. Giles Waines, Ph.D.
(909) 787-4650

The UCR Botanic Gardens are divided into two parts. One part is the landscaped area around the campus buildings demonstrating the use of a wide assortment of plants which grow well in the inland area of Southern California. Representatives of some species have been labeled for the benefit of visitors. The grounds are open to the public every day of the year.

The second part of the Botanic Gardens comprises more than 40 acres of gardens along the eastern boundary of the campus. The entrance may be reached by following the road leading southeast from parking lots 10 and 13 off east Campus Drive. This area is open to visitors from 8 a.m. to 5 p.m. daily, with the exception of the following holidays: January 1, July 4, Thanksgiving Day, and December 25.

The Gardens were established for teaching purposes and provide a wide assortment of plant materials for courses such as anthropology, art, biology, conservation, ecology, entomology, morphology, ornamental horticulture, plant pathology, photography, and taxonomy. Not only are the gardens used by UCR classes, but they are visited by classes from a variety of educational institutions in the vicinity of Riverside, as well as by other groups interested in furthering their knowledge of plants.

Other important functions of the gardens are to provide plant materials for various research projects and to serve for the testing and exhibition of plant species introduced from all parts of the world. Specialty collections include California Deserts, Baja California, Australian, Latin American and South African plants, as well as cacti, cycads, herbs, lilies, and roses. A geodesic dome lath house holds shade-loving plants. An attached orchard displays rare subtropical fruits that will grow in the Riverside area. The lower and middle elevations of the Gardens are accessible to handicapped people.

**California Educational Research Cooperative**

Graduate School of Education
(909) 787-3026; [http://cerc.ucr.edu](http://cerc.ucr.edu)

The California Educational Research Cooperative (CERC) is a unique partnership between county offices of education, local school districts, and the Graduate School of Education. It is designed to serve as a research, development, and graduate training center for members and the School by combining the professional experience and practical wisdom of practicing professional educators with the theoretical interests and research talents of UCR’s Graduate School of Education faculty. CERC provides a cooperative forum for systematic study and joint action to resolve pressing problems facing public schools.

Founded in 1988 as an educational research service for decision makers and a laboratory for faculty and graduate student interaction in the conduct of research, CERC’s agenda creates an appropriate balance between research significance, school district need, and student learning. Close cooperation with local school districts and county offices of education is a central feature of UCR’s commitment to performing relevant, high-quality research for school improvement. Now one of the nation’s most impressive regional applied research centers in education, CERC member districts represent a combined average daily attendance of more than 180,000 kindergarten through twelfth grade students, nearly 5 percent of all California school children.

**Cooperative Extension**

Interim Director, Division of Agriculture and Natural Resources,
Central Coast and South Region: Susan G. Laughlin, Ph.D.

Cooperative Extension (CE) bridges the gap between basic research conducted in campus laboratories and the individuals, organizations, and communities who are the end users of that research. UCR has 36 CE specialists who conduct outreach efforts in close cooperation with county-based CE advisors located in 67 offices throughout the state. Research and extension programs include sustainable agriculture, pest management, consumer sciences and marketing, irrigation, water quality, urban horticulture, and natural resources management.

**George E. Brown, Jr., Salinity Laboratory**

Director: Michael C. Shannon, Ph.D.
West 450 Big Springs Road
Riverside, CA 92507
(909) 369-4815; fax (909) 342-4960
[http://cnas.ucr.edu/~cnas/centers/salinity.html](http://cnas.ucr.edu/~cnas/centers/salinity.html)

Operating in close cooperation with UCR, the George E. Brown, Jr., Salinity Laboratory (GBSLB) of the U.S. Department of Agriculture Agricultural Research Service is the only research facility in the nation devoted specifically to the study and amelioration of salinity- and pesticide-related agricultural and environmental problems. Through the development of new knowledge and technology that targets problems of broad scope and high national priority, the GBSLB seeks to ensure the adequate production of food and agricultural products, to sustain a viable food and agricultural economy, and to maintain a quality environment and natural resource base. Salinity-related problems cost the United States approximately five billion dollars a year in crop losses, not to mention the incalculable costs to wildlife and the environment.

To accomplish its goals the research of the GBSLB is carried out in three management units: Soil and Water Chemistry and Assessment Research; Plant Science Research; and Soil Physics and Pesticide Research. GBSLB research projects include developing water quality and reclamation models; elucidating and quantifying the effects of salts on soils and plants; developing assessment instrumentation and technology; developing strategies to control pesticides; evaluating, predicting, and reducing pollution of soil, water, and air by pesticides while increasing their efficacy; and increasing yield and quality of crops grown on saline-affected soils. The synergy between the GBSLB and UCR researchers is substantially enhanced with the Laboratory’s location on the UCR campus.
International Services Center

Director: Diane Elton, B.A.
Watkins House
Canyon Crest Drive (next to the Bannockburn Complex)
(909) 787-4113; http://www.ucr.edu/intlsvcs

The International Services Center provides special assistance to UCR's international students and scholars, offers counseling and administrative support to anyone interested in participating in an overseas opportunity, and sponsors intercultural enrichment activities. International educational exchange programs and opportunities are described in the Student Services section of this catalog.

Natural Reserve System

http://cnas.ucr.edu/~bio/nrs.html

The purpose of the Natural Reserve System is to establish and maintain for teaching and research purposes a system of reserves encompassing the diversity of California’s natural terrain, both aquatic and terrestrial. Any qualified individual or institution may use the reserve system under the direction and with the approval of the University. UCR administers eight of the approximately 35 reserves systemwide.

- The Philip L. Boyd Deep Canyon Desert Research Center encloses approximately 331⁄2 square miles of desert habitat around Deep Canyon, in the Colorado Desert near Palm Desert. An air-conditioned field station with living quarters and laboratories is located near the mouth of Deep Canyon. A primitive campground and two-square-mile teaching area is available for class use.

- The James San Jacinto Mountains Reserve near Idyllwild is approximately 30 acres, surrounded on all sides by relatively undisturbed national forest land. Thirty miles of hiking trails connect the base reserve with thousands of acres of mid- and high-elevation wilderness, from nearby Lake Fulmor to the summit of Black Mountain at 7,800 feet. The reserve is equipped for field classes of up to 30 students and has indoor housing for small groups.

- The Oasis de los Osos Reserve is located near Snow Creek at the northern base of Mount San Jacinto. This property consists of 160 acres of rocky desert slopes and a dry alluvial fan. It also contains a perennial stream (Lamb Creek) with some waterfalls. A riparian woodland grows along this stream. A semi-desert scrub plant community occurs on the dry slopes and alluvial fan, as well as along the washes. No facilities are available at this site.

- The Box Springs Reserve consists of 160 acres near the top of Box Springs Mountains. The property includes both coastal sage scrub and chaparral habitats. No laboratory facilities are present on the property, due to the proximity of such facilities on the UCR campus. This reserve has been used for field class laboratories and student research projects. However, other research projects can be conducted at this site.

- The Sacramento Mountains Reserve contains approximately 590 acres of desert habitat in the Mojave Desert. It is located about 18 miles west of Needles along Interstate Highway 40. This property contains at least seven species of cacti, including one of the best displays of Bigelow Cholla (Opuntia bigelovii) in California. No laboratory facilities or living quarters are present on this site. However, a campsite is available for anyone wishing to use the reserve overnight for teaching or research.

- Motte Rimrock Reserve consists of approximately 650 acres at the northwestern corner of Perris, about 15 miles from campus. The vegetation is principally coastal sage scrub and grassland with riparian corridors in the canyons. This land is of more than usual biological interest for this region because it contains several species of special concern. Indian pictographs and a former Indian village site also are on this reserve. A headquarters building contains sleeping facilities for reserve users.

- The Emerson Oaks Reserve is located 5 miles east of Temecula and 1 mile south of Highway 79. This 200-acre site contains coastal sage scrub on the lower hills, chaparral on the upper slopes, and oak woodland (primarily coast live oak) in the valley portion. More than 20 acres of oaks also occur on a bench on one of the hillsides. Several permanent springs are on the property. No facilities are available at present.

- The Jack and Marilyn Sweeney Granite Mountains Desert Research Center contains approximately 9,000 acres in the Mojave Desert near Amboy (between Barstow and Needles). It has unusual biotic diversity, ranging from low Mojave Desert flora and fauna to remnants of Colorado Plateau biota on the highest peaks. A campground and a small building at Norris Camp are available for class use, and the Allanson complex includes a state-of-the-art, stand-alone research laboratory.
Richard J. Heckmann International Center for Entrepreneurial Management

(909) 787-6329

Under the auspices of the A. Gary Anderson Graduate School of Management (AGSM), the new Richard J. Heckmann International Center for Entrepreneurial Management will anchor a mini-campus in Palm Desert, California. Through cooperative arrangements with educational institutions, including other colleges and schools of UCR, the campus will become a focal point for higher education in the Coachella Valley. This mini-campus will include buildings, classrooms, and research facilities that will also serve the educational and outreach purposes of the campus partners and the AGSM.

The Center for Entrepreneurial Management was created in July 1995, in response to a growing demand for entrepreneurial education in business schools throughout the world, as well as within public and private business arenas. With the expansion of the Center at its new location in the Coachella Valley (the result of the generous gift from Richard and Mary Heckmann to UCR), it will be even better positioned to establish itself as an internationally renowned source of entrepreneurial research and education. The center is scheduled to open its doors in Fall 2001.

Statistical Consulting Center

2680 Statistics-Computer Building
(909) 787-3774
http://cnas.ucr.edu/~stat/compsult.htm

The Statistical Consulting Center provides consultative services, including design of experiments, statistical data reduction, inference and modeling for the campus community, and promotes cooperative research between statisticians and other investigators in all fields of the application of statistics. The Center is staffed by both faculty and graduate students.

SUPPLEMENTARY EDUCATION PROGRAMS

English as a Second Language

International Education Programs
UCR Extension Center
1200 University Avenue
Riverside, CA 92507-4596
(909) 787-4346; fax (909) 787-5796; ucriep@ucr.ucr.edu
http://www.ucrextension.net/iep

University Extension offers a complete intensive program in English as a Second Language for foreign students preparing to enter an American college or university, or for professionals who need improvement in English. See International Education Programs under the University of California Extension listing or the address above for more information.

Reserve Officers’ Training Corps

UCR does not have a Reserve Officers’ Training Corps (ROTC) program. Students may, however, with the permission of the dean of their college, enroll in ROTC courses at another institution while completing their degree programs at UCR. Interested students should contact the UCR Undergraduate Admissions Office regarding concurrent enrollment procedures. Descriptive pamphlets summarizing the programs are available at the UCR Career Services Center. Representatives from the participating ROTC programs also make regular visits to UCR to provide information to prospective students.

- **Air Force ROTC.** Through arrangements with the University of California, Los Angeles; California State University, San Bernardino; Loyola Marymount University; and the University of Southern California, two- and four-year Air Force Reserve Officers’ Training Corps (AFROTC) programs are available to all qualified UCR students. Academic units earned in this program may be counted as elective units toward UCR graduation requirements. Scholarship opportunities, which pay up to full UCR tuition, plus books, fees, and a $200 monthly allowance, are available for academically competitive students, especially science and engineering majors. Students in the last two years of the program automatically qualify for $3,000 per school year. Successful completion of the AFROTC program, upon graduation, leads to a commission as a Second Lieutenant with subsequent active duty service in the Air Force. Applicants to AFROTC must have at least two years remaining toward degree conferral, which may include graduate study. Entry into the last two years of AFROTC is on a competitive basis. Interested students may obtain more information by calling any of the following AFROTC program offices: UCLA (310) 825-1742; CSU San Bernardino, (909) 880-7322; USC (213) 740-2670; Loyola Marymount (310) 338-2770.

- **Army ROTC.** Through arrangements with the Department of Military Science at California State University, San Bernardino two- and four-year Army Reserve Officers’ Training Corps (AROTC) programs are available to all qualified UCR students. Academic units earned in the program may be counted as elective units toward fulfillment of UCR graduation requirements. Successful completion of the AROT program, upon graduation, leads to a commission as a Second Lieutenant with subsequent service on active duty or assignment to an Army Reserve Unit. Scholarships for two and three years are available to qualified students. A monthly $150 subsistence allowance is paid during the last two years of the program. Simultaneous participation in a reserve unit and the AROT program is allowable; participants are eligible to receive pay from both programs. Interested students may obtain more information by calling the Military Science Department, Army ROTC Program, CSU San Bernardino, (909) 880-7322.

Summer Sessions and Special Programs

Director: Curtis E. Grassman, Ph.D.
UCR Extension Center
1200 University Avenue
Riverside, CA 92507-4596
(909) 787-3044; http://summer.ucr.edu

Two five-week Summer Sessions are held each year on the UCR campus. Anyone who is a high school graduate or at least eighteen years of age may attend. In addition, high school students who have at least a 3.3 GPA average in all college preparatory subjects may apply to the Summer Academy for Advanced High School Students. It is not necessary for a student to be admitted to the University to attend Summer Sessions, nor does admission to a Summer Session constitute admission to a regular session of the University. A wide variety of courses from the regular sessions is offered, especially education courses and those courses meeting general college or division requirements. All UCR courses are normally transferable to other institutions and applicable to degree programs. For UCR students, credits and grades are automatically placed on their official transcript and record without any necessity to transfer them. UCR continuing students wishing to take courses in excess of 10 units per session must have the approval of their college dean. All other students must have the permission of the Director of Summer Sessions.

Fees for a Summer Session are the same for California residents and nonresidents. These fees are competitive and based upon a per-course tuition basis. Special discounts apply for UCR career staff employees and senior citizens.

See above address for catalogs and application forms.
University Honors Program
2316 Olmsted Hall
University of California
Riverside, CA 92521-0115
(909) 787-5320; fax (909) 787-5321
honors@ucrcl.ucr.edu

Excellent students in most undergraduate programs in the College of Humanities, Arts, and Social Sciences; the College of Natural and Agricultural Sciences; and the College of Engineering can participate in the University Honors Program (UHP). The lower-division UHP curriculum emphasizes special seminars, projects, and classes designed to introduce honors students to the rewards of scholarship and research. The upper-division UHP provides the student with the framework to produce a thesis or project under the supervision of a faculty advisor. In both the lower-division and upper-division years, the UHP challenges honors students to take an active role in shaping their education. The program offers a variety of extracurricular activities. It publishes a student-edited newsletter; provides guidebooks, catalogs, and test schedules; and offers clerical help for honors students applying to graduate and professional schools. A reading room, seminar room, and lounge and work space with computer facilities are available to honors students. Freshmen are admitted to the lower-division UHP on the basis of high school academic and extracurricular records. Continuing UCR students with an excellent academic record may apply or be nominated to participate in upper-division honors whether or not they completed lower-division honors. Students who transfer to UCR as juniors with excellent academic records may also apply or be nominated to the upper-division UHP.

UC Riverside Extension
Dean: John F. Azzaretto, D.P.A.
1200 University Avenue
Riverside, CA 92507-4596
(909) 787-4105; fax (909) 787-7374; moreinfo@ucrextension.net

University Extension is the part of the University that provides education to students not enrolled at UCR, making the scholars, research, and resources of the University available to young people and adults. While a large proportion of Extension students have attended college, most Extension programs are open to anyone who seeks higher education. Credit earned in certain Extension courses may be applicable to degree requirements at the time of admission to the University. (See University of California Extension Courses in the Curricula and Courses section.) Students who have earned credits through Extension and are interested in having these credits applied to degrees, or who are interested in earning credits through Extension that meet degree requirements, should check with the Admissions Office about the applicability of such credit. Resident students in the University wishing to apply Extension credit to degree requirements must have advance approval from the dean of their college or division before enrolling in Extension courses.

University Extension offers degree credit, postgraduate continuing education credit, and noncredit programs for pursuit of intellectual and cultural interests, professional and career advancement, and examination of topical thinking on public affairs and urban problems. Programs are offered in nearly all disciplines, including anthropology, animal science, art, earth science, economics, education, engineering, English, environmental sciences, history, human resources, law, literature, management, mathematics, music, philosophy, plant sciences, political science, psychology, real estate, sociology, urban studies and the natural sciences.

Programs vary in length and format, from one-day conferences and short lecture series to courses lasting more than one quarter and certificate programs requiring more than two years of part-time study to acquire the necessary knowledge and skills for a particular professional or avocational activity. University Extension services are available through five major channels:

1. Courses are organized in cities and towns, as well as on the UCR campus, wherever a sufficient number of people wish to study a subject.
2. The Center for Media and Independent Learning offers lessons, study materials, and University faculty guidance by mail, e-mail, fax, and online.
3. Conferences and special activities for interested groups are provided for periods ranging from one day to several weeks. Some of these programs are offered in cooperation with professional associations, government agencies, and business enterprises.
4. Educational films and videocassettes are available from the Center for Media and Independent Learning.

International Education Programs
International Education Programs (IEP) offer a wide variety of English language programs and short-term career programs for international students and professionals. All programs are offered on a year-round basis. The duration of each program varies from three weeks to one year. Programs offered include the Intensive English Program, The Conversation and American Culture Program, English for International Business Program, University Preparation Program, Teaching English to Speakers of Other Languages (TESOL) Program, Design-Your-Own Program, and several Intensive Professional Programs in global business management, law, environmental management, design, and agriculture. In addition, IEP offers support services such as program orientation, housing assistance, immigration advising, social activities, and counseling for those interested in studying at an American college or university. For further information, please contact:

International Education Programs
UCR Extension Center
1200 University Avenue
Riverside, CA 92507-4596
(909) 787-4346; fax (909) 787-5796; ucriep@ucrextension.net

For catalogs and literature describing these services in detail, write to University of California Extension at any of the following addresses: University of California Extension, Berkeley 94720; Davis 95616-9908; Irvine 92716; Los Angeles 90024; Riverside 92507-4596; Santa Barbara 93106; San Diego 92093; Santa Cruz 95064.

UC Washington Center
UC Washington Center Program Director:
Sharon V. Salinger, Ph.D.
3405 Humanities and Social Sciences
(909) 787-3683, x1988; sharon.salinger@ucr.edu

This program provides undergraduate students with a multi-dimensional educational experience in Washington, D.C. Students undertake academic pursuits as well as cultural and social activities. The program offers an exciting opportunity to combine course work with field research and internship experience. Students can also take tours of local sites, weekend trips to Mt. Vernon, or dialogue with distinguished professionals in the Speaker Series.

Students from all majors can benefit from the program. Washington, D.C. offers many different types of internships, including those on Capitol Hill. Art, art history, and dramatic arts students can intern at the numerous arts organizations, from the Kennedy Center to the Shakespeare Theatre to the Capital Children’s Museum. Internships are available at the National Institutes of Health for pre-medical and science students. Geography and
anthropology students can intern at the National Geographic Society or the Smithsonian Institution. History students can work in many archives and museums. Besides internships, living in the Washington metropolitan area offers a unique experience much like spending a quarter abroad. The nation’s capital is a diverse and dynamic city with a myriad of cultural and government-related activities.

The UC Washington Center is in downtown Washington. This innovative teaching and research facility shared by the other UC campuses has classrooms, faculty and staff offices, a small library, a modern computer lab with both IBM and Mac computers and printers, and a student lounge. Participants of the Washington Center program also have borrowing privileges at the undergraduate library at Georgetown University in Washington, as well as the Library of Congress.

**Academic Program**

Students may enroll in 12 to 16 units of course credit for the quarter. The focal point of the academic program is the internship, based on the students’ interests and major, and arranged before the student leaves for Washington.

Students also enroll in the interdisciplinary Washington Seminar. This provides the student with the opportunity to examine aspects of the Washington, D.C. area, including cultural, political, and governmental institutions as well as the arts and media. Students will be introduced to a variety of sites and speakers and asked to explore one topic.

Students choose their third course from electives offered by UC faculty in residence in Washington. These elective classes are 4 to 5 units each.

**Examples of Internship Placements**

- American Bar Association
- American Civil Liberties Union
- American Red Cross
- Amnesty International
- Bread for the World
- Brookings Institution
- Children’s Defense Fund
- Center for Strategic and International Studies
- CNN
- Congressional offices
- Democratic National Committee
- Human Rights Watch
- Institute for Policy Studies
- Interpol
- Library of Congress
- National Endowment for the Arts
- National Geographic
- National Institutes of Health
- National Organization for Women
- Overseas Private Investment Corporation
- Republican National Committee
- Smithsonian Institution
- U.S. Chamber of Commerce
- U.S. Department of Justice
- Vice-President’s Office
- Washington Office on Latin America
- The White House
- White House General Counsel’s Office
- Woodrow Wilson International Center for Scholars

**Sample of Past Elective Courses**

- Nationalism, Culture and Identities in Latin America and Europe
- Voting, Campaigning, and Elections
- The Vietnam War in Historical and Contemporary Perspective
- International Environmental Diplomacy in the 20th Century
- Environmental Law
- Topics in Multi-Ethnic Literature: Representations of the Holocaust in Film and Literature
- Social History of Washington, D.C.
- African-American Artists and Images in the Smithsonian Institution
- The Politics of Development Assistance: Washington Perspectives
- Congress at Work: The Policy-Making Process on Capitol Hill
- American Landscapes and Places
- Memoirs and Memorials
- Health Politics and Health Policy: Case Studies and Future Directions
- Interpreting Archives and Collections

Besides internships, living in the Washington area through the UC Washington Center Program offers a unique experience much like spending a quarter abroad. Photo by Michael Campbell
and are in several disciplines, including selections from the social and natural sciences, arts and humanities. All courses take advantage of Washington’s unique resources for study and research.

The quarters in D.C. are extended to approximately 12 weeks, so they may begin or end on different dates than the regular UCR quarter. Students live in UC-arranged housing, together with students from all the participating UC campuses, to experience a social and intellectual community throughout the quarter.

**Academic Planning/How to Apply**

Interested students should consult well in advance with their academic advisors and the UCR director of the Washington Center Program to determine how participation in the program will affect their degree program. Contact the director listed at the beginning of this section for information on how to apply.

**Eligibility and Selection**

Selection of participants in the Washington Center Program is subject to the following minimum requirements: a 3.00 cumulative grade point average from the time of application through departure and junior or senior standing during the participating quarter. In addition to academic criteria, the selection committee will consider the student’s seriousness of purpose, maturity, and the capacity to adapt to a study-quarter away.

**Financial Matters**

Washington Center Program participants pay the same UC and campus fees and are responsible for room and board, books, and personal expenses. The only additional cost directly related to the program is round-trip transportation.

Many forms of financial assistance are available to participants. Students who receive state and federal financial aid may use their scholarships, grants, and loans to finance their quarter away. Students who receive financial aid may also be eligible for funds from the President’s Washington Scholarship. Other support may also be available; students should consult with the director of the program for more information.

**HONORARY SOCIETIES**

- **Alpha Lambda Delta** is a national society that honors academic excellence during a student’s first year in college. Founded as an honorary society for freshmen women at the University of Illinois in 1924, Alpha Lambda Delta became a national organization in 1926, and later began initiating men as well. Its purpose is to encourage superior academic achievement among students in their first year in college, to promote intelligent living and a continued high standard of learning, and to assist women and men in recognizing and developing meaningful goals for their roles in society. The UCR chapter was established in 1995, and strives toward the goals set by the national organization. Any first-year students with a first-quarter minimum 3.5 GPA are invited to join.

- **Gamma Sigma Delta** is an honor society dedicated to recognizing academic achievement and accomplishment of students, faculty, and others whose work has contributed to agriculture. The activities and programs of Gamma Sigma Delta are carried out by the 53 chapters of the Society at universities in the United States, Puerto Rico, and the Philippines. Nominees for membership in the UCR chapter must show potential for agricultural research or have contributed to the advancement of agricultural research or agriculture. Selected students, undergraduate and graduate, and faculty are inducts at a lecture meeting in the spring. Each year, an alumnus award is presented to an outstanding recent UCR Ph.D. graduate who has made significant contributions to agriculture since leaving the campus. The UCR chapter also presents a Graduate Dissertation Award each year, to recognize outstanding UCR dissertation research in the agricultural sciences, as well as a Distinguished Science Award and an Extension Award. The chapter encourages early interest in agricultural sciences through science fair awards to high school students with projects related to agriculture.

- **Omicron Delta Kappa**, the National Leadership Honor Society, was founded December 3, 1914, at Washington and Lee University, Lexington, Virginia, by fifteen student and faculty leaders. In the tradition of the idealism and leadership of George Washington and Robert E. Lee, the founders formulated the ideas to recognize leadership of exceptional quality and versatility in college, including representatives in all phases of college life; that those representatives should cooperate in a worthwhile endeavor, and outstanding students, faculty and administrators should meet on a basis of mutual interest, understanding and helpfulness.

The UCR Circle of Omicron Delta Kappa was chartered in 1994 and strives toward the original ideals set by the founders back in 1914. Men and women undergraduate students, graduate students, faculty, staff, and alumni of UCR are all welcome to apply during each spring quarter. Undergraduate students must be at least in their junior year, and have a minimum cumulative GPA of 3.0 or higher. Members are selected on the basis of academic achievement, proven leadership ability, and diverse involvement in campus organizations.

- **Order of Omega** is a national Greek honor society founded at the University of Miami in the fall of 1959 by a group of outstanding fraternity men, who felt that individuals in the Greek community should be recognized for their service to the fraternity system and the university. The Kappa Alpha Chapter of Order of Omega was chartered at UCR in 1989. The Order of Omega honors only the top 3 percent of the University Greek population for excellence in academics, leadership and campus/community service. Any junior or senior member of the University Greek organization who has maintained a minimum 3.0 cumulative GPA is eligible to apply. New members are selected every spring quarter.

- **Phi Beta Kappa** is the oldest (1776) American scholarly fraternity, Iota Chapter (California) at UCR is, like all other chapters, subject to regulations of the Phi Beta Kappa Society. It may elect approximately 10 percent of seniors majoring in liberal subject areas of the arts and sciences. Scholarly achievement, character, and broad cultural interests are the bases for election by Iota Chapter. Grades earned in applied or professional courses are not counted in computing GPA. Eligibility is determined during the spring quarter by a committee of members, and invitations to join are extended at that time. All prospective members must have the equivalent of level four (intermediate skill level) of a foreign language and some significant evidence of breadth through courses beyond those required for the major or by the student’s college. Students in the College of Humanities, Arts, and Social Sciences are strongly encouraged to take courses in each of the following fields: mathematics, biological sciences, and physical sciences. Likewise, students in the College of Natural and Agricultural Sciences must have breadth beyond their own College demonstrated
by taking courses in both social sciences and humanities areas. A few students with exceptionally good records may be elected during their junior year.

- The Society of Sigma Xi, founded in 1886, is an international honorary organization rewarding excellence in research and encouraging companionship and cooperation among scientists in all fields. Nominations to membership are made by members of the local chapter in accordance with criteria established by the national organization. These criteria relate to the candidates' potential and demonstrated capacity for scientific research.

Each year the UCR chapter sponsors one seminar speaker of scientific interest to both the University and the local community. The Sigma Xi chapter recognizes the need to encourage science teachers in public schools and young scientists at the elementary, high school, undergraduate, and graduate levels in all scientific areas. The latter is accomplished through national fellowships to deserving young scientists engaged in research and, at the local level, by recognition of their accomplishments.

UNIVERSITY ADVANCEMENT

University Advancement has primary responsibility for informing the public of University achievements, events, and issues; coordinating campus-community relations; and generating maximum external support for the University. Headed by the Vice Chancellor for University Advancement, the office comprises six major units: Alumni and Constituent Relations, Development, Governmental and Community Relations, Event Management and Protocol, University Relations (Public Information and Creative Design Services), and New Initiatives and Economic Development.

- **Alumni and Constituent Relations** provides administrative liaison and support for the UCR Alumni Association. Established in 1955, the Association is a separately incorporated nonprofit organization that represents the interests of UCR's nearly 50,000 graduates on important campus issues and keeps them in touch with their alma mater. The office also plays an active and supportive role with UCR students and their parents through its work with the Student Alumni Association and the Parents Association.

- The **Development Office** actively encourages private financial support for the campus from individuals, corporations, and foundations. Within the Development Office are specialists in planned, major, and annual giving, and corporate and foundation relations. The office also provides liaison and administrative support for the UC Riverside Foundation. Approximately $30 million in external giving is currently attracted to the campus annually.

- **Event Management and Protocol** makes arrangements for public ceremonies and special programs such as Commencement, the Chancellor's Associates, the Press-Enterprise Scholars' Banquet, Bourns Science and Engineering Day, and a variety of special events hosted by the Chancellor.

- **Governmental and Community Relations** is responsible for outreach to local, state, and federal leadership. The office also establishes and maintains a liaison with area and regional business and industry leaders. Additionally, the unit coordinates the activities of University-affiliated groups and other support groups including the Affiliates, the Citizens University Committee, and others. The office also coordinates the activities of the University/Eastside Community Collaborative (UECC). UECC/AmeriCorp is a community service program that offers UCR students and residents of the city of Riverside an opportunity to serve the community through tutorial, community building, and educational events.

- **University Relations** has primary responsibility for relations with print and broadcast news media. The office also produces a variety of publications including a fact sheet, a campus map, the Fiat Lux magazine, and the Campus Guide and Directory. Staff members are available to consult with campus units on publications development, marketing, design, and production issues. The Creative Design Services unit coordinates production of University publications for campus departments and provides professional design and production services.

The Office of New Initiatives and Economic Development

B-206 Highlander Hall
(909) 787-3322
[http://nied.ucr.edu](http://nied.ucr.edu)

New Initiatives and Economic Development is responsible for developing and coordinating private/public partnerships to expand the academic and research opportunities for UCR and for stimulating and coordinating re-development and economic improvement activities on or near the University to enhance the available opportunities to the campus community. Specific attention is focused on developing industrial relationships which create intellectual partnerships with local industries, faculty, and students. These private/public partnerships include the development of intellectual linkages with local technology-based companies, resulting in faster-growing companies, a stronger economy, and internships and job opportunities for students. As part of its regional technology strategy, the Office is currently developing the University Research Park [http://researchpark.ucr.edu](http://researchpark.ucr.edu). Other initiatives include Riverside Community Online [http://www.rcol.org](http://www.rcol.org) and a regional online technology job/internship site [http://www.itechjobs.com](http://www.itechjobs.com).

Other partnerships include redevelopment projects focused on creating a higher quality of life around the campus. One such initiative is University Village, a partnership between UCR, the city of Riverside, and a private developer, Southland Land Corporation [http://www.uvriverside.com](http://www.uvriverside.com).

CAMPUSTOURS

For reservations and information contact
Special Events and Tours
(909) 787-5045
[tourUCR@pop.ucr.edu](mailto:tourUCR@pop.ucr.edu)
[http://www.admissions.ucr.edu/UCRview/viewtoc.html](http://www.admissions.ucr.edu/UCRview/viewtoc.html)

Anyone can take advantage of a campus tour: prospective students, new faculty members, or visitors to the area. Walking tours are offered Monday through Friday and selected Saturdays. Arrangements for large group tours are also available by reservation.
Students celebrate the annual tradition of painting the Big C, a landmark in the Box Springs Mountains near campus. Photo by Timilie Woodruff
APPLICATION FOR UNDERGRADUATE ADMISSION

The Office of Undergraduate Admissions is responsible for the admission of new undergraduate freshmen and transfer students. The Office is also responsible for the addition of transfer units to the UCR records of continuing and readmitted students.

Inquiries may be addressed to:

Office of Undergraduate Admissions
1138 Hinderaker Hall
University of California, Riverside
Riverside, CA 92521
(909) 787-4531; discover@pop.ucr.edu
http://www.admissions.ucr.edu

The undergraduate application for admission to the University of California is contained in the UC Undergraduate Application for Admission and Scholarships packet. Application packets are available from the counseling office of any California high school or community college or from any University of California Admissions Office. Applications are available about four weeks before the opening date of the filing period.

Apply in Writing

Applicants should submit their completed application form together with the required nonrefundable application fee to:

University of California
Undergraduate Application Processing Service
P.O. Box 23460
Oakland, CA 94623-0460

Apply Online

http://www.ucop.edu/pathways

Prospective students may also submit their fall quarter UC application electronically at the above address. Only applications for fall quarter are accepted electronically. Students may also download a copy of the application form and booklet in PDF format from the Web site.

WHEN TO APPLY

To ensure that applicants will be considered for admission to the campus and major of their choice, the completed application and the application fee should be postmarked during the priority filing period. UCR will consider all applications filed during this period.

After the priority filing period has ended, campuses will consider applications only if they still have openings for new students. This means some campuses may still be able to process additional applications in some majors and other campuses may not. Prospective UCR applicants who have not filed during the priority filing period should contact Undergraduate Admissions for more information about the advisability of filing a late application.
ADMISSION AS A FRESHMAN

The admission requirements summarized on the following pages are the minimum needed to be considered eligible for admission to UCR and other campuses of the University of California. Some programs are highly competitive and can accept only a limited number of students each year; completing the required high school courses with satisfactory grades may not automatically guarantee that a student will be admitted to majors with additional selection criteria. Check specific majors in this catalog to determine if additional requirements exist.

The University defines a “freshman applicant” as a student who has graduated from high school and has not enrolled in a regular session of any collegiate-level institution. Summer sessions immediately following high school graduation are excluded in the determination.

Freshman applicants who are not residents of California must meet higher scholarship requirements. See Nonresidents below for admission requirements.

Advanced standing credit will be granted for an acceptable college course taken while still in high school if reported on a valid transcript issued by the college that conducted the course.

If, at the time of high school graduation, students do not meet the subject and/or scholarship requirements for admission to freshman standing or do not qualify by examination, they may be admitted after meeting the requirements for admission as a transfer student. See the section below on Admission as a Transfer Student.

Basic Eligibility Requirements

California Residents

There are three pathways to satisfying the University’s minimum admission requirements for freshman students: eligibility in the state-wide context, eligibility in the local context, and eligibility by examination alone.

1. Eligibility in the Statewide Context

Eligibility in the Statewide Context is the pathway by which most students attain UC eligibility. To be eligible in the statewide context, students must satisfy the Subject, Scholarship, and Examination Requirements described on the following pages.

Subject Requirement

To satisfy this requirement, students must complete the 15 units of high school course work listed in the box on this page. (A unit is equal to an academic year, or two semesters, of study.) These courses are also known as the “a–f” subjects or requirements.

At least 7 of the 15 units must be taken in the last two years of high school.

California High School Students. For students who attend high school in California, the courses taken to fulfill the Subject Requirement must be certified by the University as meeting the requirement and must be included on the high school’s UC certified course list. The counselor or principal will have a copy of this list. In addition the lists are available online at http://www.ucop.edu/pathways/infoctr/doorway_index.html.

Change Effective Fall 2003. Beginning with applicants for Fall 2003, the Subject Requirement will include one unit of course work in visual and performing arts (dance, drama/theater, music, or visual arts). The number of college preparatory electives required will be reduced from 2 units to 1, so the total number of Subject Requirement units will remain at 15.

The visual and performing arts requirement will be labeled the “f” requirement, and the college preparatory elective requirement will be labeled the “g” requirement.

Subject Requirement

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Units Required</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. History/Social Science</td>
<td>2 years required</td>
<td>Two years of history/social science, including one year of U.S. history or one-half year of U.S. civics or American government; and one year of world history, cultures, and geography.</td>
</tr>
<tr>
<td>b. English</td>
<td>4 years required</td>
<td>Four years of college preparatory English that include frequent and regular writing, and reading of classic and modern literature. Not more than two semesters of ninth grade English can be used to meet this requirement.</td>
</tr>
<tr>
<td>c. Mathematics</td>
<td>3 years required, 4 years recommended</td>
<td>Three years of college preparatory mathematics that include the topics covered in elementary and advanced algebra and two- and three-dimensional geometry. Approved integrated math courses may be used to fulfill part or all of this requirement, as may math courses taken in the seventh and eighth grades that the student’s high school accepts as equivalent to its own math courses.</td>
</tr>
<tr>
<td>d. Laboratory Science</td>
<td>2 years required, 3 recommended</td>
<td>Two years of laboratory science providing fundamental knowledge in at least two of these three disciplines: biology (which includes anatomy, physiology, marine biology, aquatic biology, etc.), chemistry, and physics. Laboratory courses in earth/space sciences are acceptable if they have as prerequisites or provide basic knowledge in biology, chemistry, or physics. The appropriate two years of an approved integrated science program may be used to fulfill this requirement. Not more than one year of ninth grade laboratory science can be used to meet this requirement.</td>
</tr>
<tr>
<td>e. Language Other Than English</td>
<td>2 years required, 3 years recommended</td>
<td>Two years of the same language other than English. Courses should emphasize speaking and understanding, and include instruction in grammar, vocabulary, reading, and composition. Courses in language other than English taken in the seventh and eighth grade may be used to fulfill part of this requirement if the student’s high school accepts them as equivalent to its own courses.</td>
</tr>
<tr>
<td>f. College Preparatory Electives</td>
<td>2 years required</td>
<td>Two years (four semesters), in addition to those required in “a–e” above, chosen from the following areas: visual and performing arts, history, social science, English, advanced mathematics, laboratory science, and language other than English (a third year in the language used for the “e” requirement or two years of another language).</td>
</tr>
</tbody>
</table>
Scholarship Requirement

The Scholarship Requirement defines the grade point average (GPA) students must attain in the "a–f" subjects and the SAT I (or ACT) and SAT II test scores that must be earned to be eligible for admission to the University.

Students with a GPA of 2.80 or above must satisfy the minimum Scholarship Requirement to achieve the test score total indicated in the Eligibility Index Table.

The University calculates the GPA in the "a–f" subjects by assigning point values to the grades earned, totaling the points, and dividing the total by the number of "a–f" course units. Points are assigned as follows: "A"=4 points, "B"=3 points, "C"=2 points, "D"=1 point, and "F"=0 points.

Only the grades earned in "a–f" subjects in the tenth, eleventh, and twelfth grades are used to calculate the GPA. Courses taken in ninth grade can be used to meet the Subject Requirement if a grade of "C" or better was earned, but they will not be used to calculate the GPA.

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

The courses must be in the following "a–f" subjects: history, English, advanced mathematics, laboratory science, and foreign language, and they must be certified as honors courses by the University. In these fields, as well as in the fields of computer science, social science, and the visual and performing arts, courses that are designed to prepare students for an Advanced Placement Examination of the College Board or a Higher Level Examination of the International Baccalaureate and college courses that are transferable to the University are acceptable honors-level courses.

"D" and "F" Grades. "D" and "F" grades in the "a–f" courses must be repeated or validated. The student’s counselor can determine how these grades can be improved and how the University will use them in evaluating the scholarship record. Grades for repeated courses in which initially a grade of "C" or better was earned will not be used.

Examination Requirement

Students must submit the following test scores:

- Either the Scholastic Assessment Test I: Reasoning Test (SAT I) or the ACT. The verbal and mathematics scores on the SAT I must be from the same sitting. The ACT composite score must be submitted.
- Three Scholastic Assessment Test II: Subject Tests (SAT II), including Writing, Mathematics Level 1 or Level 2, and one test in one of the following areas: English literature, foreign language, science, or social studies.

SAT Program Tests. To register for SAT tests, a student must obtain a registration packet from the high school counselor or register online at http://www.collegeboard.org.

ACT to SAT I Conversion

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

SAT Test Date | Registration Deadline
-------------|---------------------|
October 14, 2000 (SAT I, SAT II) | September 12, 2000
November 4, 2000 (SAT I, SAT II) | September 29, 2000
December 2, 2000 (SAT I, SAT II) | October 27, 2000
January 27, 2001 (SAT I, SAT II) | December 22, 2000
March 31, 2001 (SAT I only) | February 23, 2001
May 5, 2001 (SAT I, SAT II) | March 29, 2001
June 2, 2001 (SAT I, SAT II) | April 27, 2001

ACT Test Date | Registration Deadline
--------------|---------------------|
September 23, 2000 | August 18, 2000
October 28, 2000 | September 22, 2000
December 9, 2000 | November 3, 2000
February 10, 2001 | January 5, 2001
April 7, 2001 | March 2, 2001
June 9, 2001 | May 4, 2001
2. **Eligibility in the Local Context**

Under the Eligibility in the Local Context (ELC) pathway, the top 4 percent of students at each participating California high school are designated UC eligible and guaranteed admission to one of UC’s eight general campuses, beginning with students entering UC in Fall 2001.

To be considered for ELC, a student must complete 11 specific units of the Subject Requirement by the end of the junior year. With the assistance of each participating high school, the University will identify the top 4 percent of students on the basis of GPA in the required course work.

The 11 units include: 1 unit of history/social science, 3 units of English, 3 units of mathematics, 1 unit of laboratory science, 1 unit of language other than English, and 2 units chosen from among the other subject requirements.

The University will notify ELC students of their status at the beginning of their senior year. A student designated UC-eligible through ELC must submit the University’s undergraduate application during the November filing period and complete remaining eligibility requirements — including the Subject and Examination Requirements — to enroll.

ELC students are guaranteed a spot at one of UC’s eight undergraduate campuses, though not necessarily at their first-choice campus.

3. **Eligibility by Examination Alone**

Students who do not meet the requirements for Eligibility in the Statewide Context or Eligibility in the Local Context may be able to qualify for admission to the University by examination.

To satisfy the minimum requirements for eligibility by examination alone, students must achieve a composite score of 31 or higher on the ACT or a total score of at least 1400 on the SAT I. In addition, they must earn a total score of 1760 or higher on the three SAT II: Subject Tests with a minimum score of 530 on each test.

Students cannot qualify for admission by examination alone if they have completed 12 or more units of transferable course work at another college or university following high school graduation, or if they have taken transferable college courses in any subject covered by the SAT II: Subject Tests.

**Nonresidents**

There are two paths to UC eligibility for nonresidents at the freshman level. The first is the same as described above under Eligibility in the Statewide Context and the second is the same as described above under Eligibility by Examination Alone, with the following exceptions:

**Scholarship Requirement.** The grade point average in the “a–f” subjects must be 3.4 or higher, regardless of SAT I (or ACT) and SAT II scores. The Eligibility Index is used only for California residents.

**Admission by Examination Alone.** Students must earn a composite score of 31 or higher on the ACT or a total score of at least 1400 on the SAT I. The total score on the three SAT II: Subject Tests must be at least 1850 with a minimum score of 530 on each test.

**Selection Criteria**

**College of Engineering**

Freshman applicants to the College of Engineering who excel in the academic criteria, with additional emphasis on mathematics and science preparation, and who qualify for first-quarter calculus, are selected. Students not qualifying for specific engineering majors who meet campus selection criteria, are considered for Engineering (Prep).

**Division of Biomedical Sciences**

Applicants who excel in the academic criteria, with additional emphasis on mathematics and science preparation, are considered. The following are essential: a) at least three high school laboratory courses; b) mathematics competency so as to qualify for college-level calculus; and c) English composition proficiency so as to qualify for placement either in ENGL 001A or BSWT 001. Students not qualifying for the Biomedical Sciences major, but meeting campus selection criteria, are considered for their alternate major.

**Student Conduct**

Disciplinary suspension or dismissal from a prior educational institution is considered in the admission decision.

**Transfer Credit**

Transfer credit may be granted to a freshman applicant for an acceptable college course taken while in high school when an official transcript is received from the college that conducted the course.

**International Baccalaureate**

The University grants 8 quarter units credit for each International Baccalaureate (IB) higher level examination on which a student scores 5 or higher. Higher level examinations are considered honors courses. The University does not grant credit for subsidiary level examinations.

Some higher level examinations may be considered equivalent to freshman level courses in the subject and may be used to satisfy general education or breadth requirements.

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 one 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.

**Advanced Placement**

The University grants credit for all College Board Advanced Placement Tests for which a student scores 3 or higher. The credit may be subject credit, graduation credit, or credit toward general education or breadth requirements, as determined by each college office.

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

College courses taken prior to or after enrolling at the University may duplicate the content of AP examinations. In these cases, the University may not award credit for both the course and the AP exam.

The University grants credit for Advanced Placement tests as described in the charts on the following pages.

**Preparation for University Work**

In addition to the high school subjects required for admission to the University, certain preparatory subjects are recommended for many University curricula to give students an adequate background for their
ADMISSION AS A TRANSFER STUDENT

The University defines a transfer applicant (advanced standing applicant) as a high school graduate who has been a registered student in another college or university or in college-level extension classes other than a summer session immediately following high school graduation. A transfer applicant may not disregard a college record and apply for admission as a freshman.

Applications to the College of Engineering (except for Computer Science majors) may be filed only for fall quarter because courses are sequential, beginning in the fall. Applications to Computer Science will be accepted for any quarter. The College of Natural and Agricultural Sciences accepts admission applications for most majors for fall, winter, and spring quarters. However, Biology and Biological Sciences only accept applications for fall and winter quarters, while Biochemistry, Biomedical Sciences, and Chemistry only accept applicants for fall quarter because courses must be taken in sequence. The College of Humanities, Arts, and Social Sciences accepts applications for fall, winter, and spring quarters.

Transfer Admission Requirements

There are three ways to meet the University’s minimum admission requirements for transfer students. These requirements are described below. In all cases, applicants must have at least a “C” (2.00) average in all transferable course work. Those applicants not in good standing at any college attended may have to meet additional admission requirements.

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” (2.00) average in their transferable college 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” (2.00) average in all transferable college course work to be eligible to transfer. Students who met the scholarship requirement but did not meet the examination requirement must complete a minimum of 12 semester (18 quarter) units of transferable work and earn an overall “C” (2.00) average in all transferable college course work completed.

3. Students who were not eligible for admission to the University when they graduated from high school because they did not meet the scholarship requirement must:
   a) Complete 90 quarter units or 60 semester units of transferable college credit with a grade point average of at least 2.40 and
   b) Complete (with “C” grades or better) a course pattern requirement to include:
      (1) Two transferable college courses, (3 semester or 4-5 quarter units each) in English composition; and
      (2) One transferable college course (3 semester or 4-5 quarter units) in mathematical concepts and quantitative reasoning; and
      (3) Four transferable college courses (3 semester or 4-5 quarter units each) chosen from at least two of the following subject areas: the arts and humanities, the social and behavioral sciences, the physical and biological sciences.

High School Proficiency Examination

Transfer applicants who have passed the examination must also meet regular University entrance requirements. High school eligibility must first be established for applicants with less than 90 quarter (60 semester) units of transferable credit.

Selection Criteria

UCR attempts to accommodate as many qualified students from other universities and colleges as possible, particularly as seniors. However, in some circumstances selectivity beyond UC eligibility is required. Applicants to the College of Natural and Agricultural Sciences, Business Administration, Engineering majors, and those with 150 units or more are subject to screening beyond the minimum admission requirements for transfer students.

Majors in the College of Natural and Agricultural Sciences

Transfer applicants to majors in the College of Natural and Agricultural Sciences should have an overall GPA of 2.70 or better and have completed all lower-division requirements for their intended major, as described in this catalog. Short of completing all lower-division major requirements, transfer applicants should have completed, at a minimum, at least two of the following lower-division courses and curriculum sections available to the specific major. See Admission to Majors under the College of Natural and Agricultural Sciences section of this catalog. Further information can be obtained by calling the College Student Affairs Office at (909) 787-7294.

Business Administration

Transfer applicants to Business Administration must have completed all breadth requirements or the Intersegmental General Education Transfer Curriculum (IGETC) and 7 of the 10 prerequisites for the major (see Business Administration under the Courses and Curricula section of this catalog). UC-eligible students who have not met the above requirements may be admitted in a business preparatory status or may be considered for their alternate major. Further information may be obtained by calling the A. Gary Anderson Graduate School of Management Student Affairs Office at (909) 787-4551.
<table>
<thead>
<tr>
<th>Advanced Placement Examination</th>
<th>AP Score</th>
<th>Unit Credit</th>
<th>College of Humanities and Social Sciences</th>
<th>College of Natural and Agricultural Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art History</td>
<td>3,4,5</td>
<td>8</td>
<td>4 units towards a Humanities (Fine Arts) breadth requirement and 4 units of elective credit</td>
<td>4 units towards a Humanities (Fine Arts) breadth requirement and 4 units of elective credit</td>
</tr>
<tr>
<td>Studio Art1</td>
<td>3,4,5</td>
<td>8</td>
<td>4 units towards a Humanities (Fine Arts) breadth requirement and 4 elective units</td>
<td>4 units towards a Humanities (Fine Arts) breadth requirement and 4 elective units</td>
</tr>
<tr>
<td>General Portfolio</td>
<td>3,4,5</td>
<td>8</td>
<td>4 units towards a Humanities (Fine Arts) breadth requirement and 4 elective units</td>
<td>4 units towards a Humanities (Fine Arts) breadth requirement and 4 elective units</td>
</tr>
<tr>
<td>Biology</td>
<td>3,4,5</td>
<td>8</td>
<td>4 units towards a Mathematics/Natural Science (Biological Sciences) breadth requirement and 4 units of elective credit</td>
<td>8 units of elective credit</td>
</tr>
<tr>
<td>Chemistry</td>
<td>3,4,5</td>
<td>8</td>
<td>Credit for CHEM 001W and 5 units of elective credit</td>
<td>Credit for CHEM 001W and 5 units of elective credit</td>
</tr>
<tr>
<td>Computer Science2</td>
<td></td>
<td></td>
<td>2 units of elective credit</td>
<td>2 units of elective credit</td>
</tr>
<tr>
<td>A Examination</td>
<td>3</td>
<td>2</td>
<td>2 units of elective credit</td>
<td>2 units of elective credit</td>
</tr>
<tr>
<td></td>
<td>4,5</td>
<td>2</td>
<td>2 units of elective credit and placement after individual counseling</td>
<td>2 units of elective credit and placement after individual counseling</td>
</tr>
<tr>
<td>AB Examination</td>
<td>3</td>
<td>4</td>
<td>4 units of elective credit</td>
<td>4 units of elective credit</td>
</tr>
<tr>
<td></td>
<td>4,5</td>
<td>4</td>
<td>4 units of elective credit (course coverage determined after individual counseling)</td>
<td>4 units of elective credit (course coverage determined after individual counseling)</td>
</tr>
<tr>
<td>Economics</td>
<td></td>
<td></td>
<td>4 units of elective credit</td>
<td>4 units of elective credit</td>
</tr>
<tr>
<td>Macroeconomics</td>
<td>3,4,5</td>
<td>4</td>
<td>Credit for ECON 002</td>
<td>Credit for ECON 002</td>
</tr>
<tr>
<td>Microeconomics</td>
<td>3,4,5</td>
<td>4</td>
<td>Credit for ECON 003</td>
<td>Credit for ECON 003</td>
</tr>
<tr>
<td>English1</td>
<td></td>
<td></td>
<td>4 units of elective credit</td>
<td>4 units of elective credit</td>
</tr>
<tr>
<td>Language/Composition</td>
<td>3</td>
<td>8</td>
<td>Credit for ENGL 001A and 4 units of elective credit (or 8 units of elective credit if the student chooses to enroll in ENGL 001A)</td>
<td>Credit for ENGL 001A and 4 units of elective credit (or 8 units of elective credit if the student chooses to enroll in ENGL 001A)</td>
</tr>
<tr>
<td></td>
<td>4,5</td>
<td>8</td>
<td>Credit for ENGL 001A and ENGL 001B</td>
<td>Credit for ENGL 001A and ENGL 001B</td>
</tr>
<tr>
<td>Literature/Composition</td>
<td>3</td>
<td>8</td>
<td>Credit for ENGL 001A and 4 units of elective credit (or 8 units of elective credit if the student chooses to enroll in ENGL 001A)</td>
<td>Credit for ENGL 001A and 4 units of elective credit (or 8 units of elective credit if the student chooses to enroll in ENGL 001A)</td>
</tr>
<tr>
<td></td>
<td>4,5</td>
<td>8</td>
<td>Credit for ENGL 001A and ENGL 001B</td>
<td>Credit for ENGL 001A and ENGL 001B</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>3,4,5</td>
<td>4</td>
<td>Credit for EN SC 001</td>
<td>Credit for EN SC 001</td>
</tr>
<tr>
<td>French</td>
<td></td>
<td></td>
<td>8 units of elective credit</td>
<td>8 units of elective credit</td>
</tr>
<tr>
<td>Language</td>
<td>3,4,5</td>
<td>8</td>
<td>4 units towards a Humanities (Literature) breadth requirement and 4 units of elective credit</td>
<td>4 units towards a Humanities (Literature) breadth requirement and 4 units of elective credit</td>
</tr>
<tr>
<td>Literature</td>
<td>3,4,5</td>
<td>8</td>
<td>8 units of elective credit</td>
<td>8 units of elective credit</td>
</tr>
</tbody>
</table>

1Maximum credit 8 units
2Maximum credit 4 units

For subject abbreviations see page 89.
<table>
<thead>
<tr>
<th>Advanced Placement Examination</th>
<th>AP Score</th>
<th>Unit Credit</th>
<th>College of Humanities and Social Sciences</th>
<th>College of Natural and Agricultural Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>3,4,5</td>
<td>8</td>
<td>8 units of elective credit</td>
<td>8 units of elective credit</td>
</tr>
<tr>
<td>• Language</td>
<td></td>
<td></td>
<td>4 units towards a Humanities (Literature) breadth requirement and 4 units of elective credit</td>
<td>4 units towards a Humanities (Literature) breadth requirement and 4 units of elective credit</td>
</tr>
<tr>
<td>• Literature</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Government and Politics</td>
<td>3,4,5</td>
<td>8</td>
<td>8 units of elective credit</td>
<td>8 units of elective credit</td>
</tr>
<tr>
<td>• American Government</td>
<td></td>
<td></td>
<td>4 units towards a Humanities (Literature) breadth requirement and 4 units of elective credit</td>
<td>4 units towards a Humanities (Literature) breadth requirement and 4 units of elective credit</td>
</tr>
<tr>
<td>• Comparative Government</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History</td>
<td>3,4,5</td>
<td>8</td>
<td>8 units of elective credit</td>
<td>8 units of elective credit</td>
</tr>
<tr>
<td>• United States</td>
<td></td>
<td></td>
<td>4 units towards a Humanities breadth requirement and 4 units of elective credit</td>
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</tr>
<tr>
<td>• European</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Latin</td>
<td>3,4,5</td>
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<td>4 units of elective credit</td>
<td>4 units of elective credit</td>
</tr>
<tr>
<td>• Virgil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Literature</td>
<td></td>
<td></td>
<td>4 units towards a Humanities (Literature) breadth requirement and 4 units of elective credit</td>
<td>4 units towards a Humanities (Literature) breadth requirement and 4 units of elective credit</td>
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<tr>
<td>Mathematics</td>
<td>3,4,5</td>
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<td>4 units of elective credit</td>
</tr>
<tr>
<td>• AB Examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• BC Examination</td>
<td></td>
<td></td>
<td>4 units towards a Humanities (Fine Arts) breadth requirement and 4 units of elective credit</td>
<td>4 units towards a Humanities (Fine Arts) breadth requirement and 4 units of elective credit</td>
</tr>
<tr>
<td>• Theory</td>
<td>3,4,5</td>
<td>8</td>
<td>8 units of elective credit</td>
<td>8 units of elective credit</td>
</tr>
<tr>
<td>• Listen and Literature</td>
<td></td>
<td></td>
<td>4 units towards a Humanities (Fine Arts) breadth requirement and 4 units of elective credit</td>
<td>4 units towards a Humanities (Fine Arts) breadth requirement and 4 units of elective credit</td>
</tr>
<tr>
<td>Music</td>
<td>3,4,5</td>
<td>8</td>
<td>8 units of elective credit</td>
<td>8 units of elective credit</td>
</tr>
<tr>
<td>• Examination B</td>
<td></td>
<td></td>
<td>4 units towards a Natural Science (Physical Sciences) breadth requirement and 4 units of elective credit</td>
<td>8 units of elective credit</td>
</tr>
<tr>
<td>• Examination C: Mechanics</td>
<td>3,4</td>
<td>4</td>
<td>4 units of elective credit</td>
<td>4 units of elective credit</td>
</tr>
<tr>
<td>• Examination C: Electricity and Magnetism</td>
<td>3,4</td>
<td>4</td>
<td>4 units of elective credit</td>
<td>4 units of elective credit</td>
</tr>
<tr>
<td>• Psychology</td>
<td>3</td>
<td>4</td>
<td>4 units towards a Social Sciences (Psychology) breadth requirement</td>
<td>4 units towards a Social Sciences (Psychology) breadth requirement</td>
</tr>
<tr>
<td>• Statistics</td>
<td>3,4,5</td>
<td>4</td>
<td>Cred for STAT 040</td>
<td>Cred for STAT 040</td>
</tr>
</tbody>
</table>

1Maximum credit 8 units

For subject abbreviations see page 89.
**Majors in the College of Engineering**

Transfer applicants to Engineering majors should have completed the prerequisites for the major (see Engineering sections under the Curricula and Courses section of this catalog) and have attained junior level standing (90 quarter units). UC-eligible students not qualifying for the major are considered for admission to their alternate major.

Prerequisite information can be obtained by calling The Marlan and Rosemary Bourns College of Engineering Office of Student Affairs at (909) 787-5651.

**150 Quarter Units or More**

UC-eligible applicants with 150 quarter (100 semester) units or more of transfer credit will be reviewed by the dean of the college for completion of a specified pattern of courses that provides continuity with upper-division courses within the major.

**Student Conduct**

Disciplinary suspension or dismissal from a prior educational institution is considered in the admission decision.

**UC Intercampus Transfer**

A regular undergraduate student who is registered on any campus of the University may apply for transfer to another campus of the University by filing the University of California Undergraduate Application. Fees and procedures are the same for all undergraduates, and there is no special procedure for intercampus transfer.

An undergraduate student in good standing, currently registered on the UCR campus, may apply for intercampus visitor status at another UC campus for one term. Forms and instructions are available at the Office of the Registrar, 1100 Hinderaker Hall.

**Nonresident Transfer Applicants**

In addition to meeting the regular requirements for transfer admission, an applicant who is not a resident of California must also have a grade point average of 2.80 or higher in the college courses that are accepted by the University for transfer credit.

Nonresident applicants lacking any of the required subjects in high school must complete college courses in those subjects with a grade of "C" or higher. A nonresident applicant who graduated from high school with less than a 3.40 grade point average in the subjects required for freshman admission must have completed at least 90 quarter (60 semester) units of transferable work with a grade point average of 2.80 or higher.

**ADMISSION TO SPECIAL CATEGORIES**

Applications for admission to special categories must be filed before the application closing date and should be accompanied by a statement of goals. Please contact Undergraduate Admissions for further details.

Students with no specific degree plans or goals are encouraged to enroll in courses through University Extension.

**Limited Status**

A person who holds a bachelor’s degree or has completed a substantial amount of college work and who, because of special circumstances, requires specific courses toward a definite objective and for a limited period may apply for admission in Limited Status. Eligibility for admission is determined by the Office of Undergraduate Admissions, and the status requires the approval of the dean of the applicant’s college or division. Admission is for a specified period of time, and the student must maintain a prescribed scholastic average. Units earned are not creditable to an advanced degree.

**Special Status**

A person over 21 who has not had the opportunity to complete a high school program or a substantial amount of college work but who, because of special needs, requires specific courses towards a definite objective and for a limited period may apply for admission in Special Status. Admission in Special Status is not granted to those direct from high school or for the purpose of making up admission deficiencies. Similar rules apply as for Limited Status students discussed previously.

**Second Baccalaureate**

Occasionally, 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 to a second baccalaureate program requires the approval of the dean of the student’s college. The second baccalaureate requires senior residency and is subject to the University requirements for graduation, as well as the requirements of the college in which the second degree is to be taken, including all breadth, distribution, and major requirements. Applicants must be fully eligible for admission to the University, and their records must indicate strong probability of success in the new area.

**ADMISSION OF INTERNATIONAL APPLICANTS**

The credentials of an international applicant — a student who holds or expects to hold a student, exchange, visitor, diplomatic, or any other visa and who wishes to attend school in the United States as an undergraduate — are evaluated in accordance with the general regulations governing admission. An application and fee should be mailed to:

University of California
Undergraduate Application Processing Service
P.O. Box 23460
Oakland, CA 94623-0460

Official certificates, detailed transcripts of record, including hours and marks; Test of English as a Foreign Language (TOEFL); course syllabi; and confidential financial statement should be submitted to the Office of Undergraduate Admissions 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.

An applicant from another country whose native language is not English may be admitted only after demonstrating a command of English sufficient to permit the student to profit by instruction in the University. Nonimmigrant visa applicants are required to take the TOEFL and score a minimum of 550 (paper-based) or 213 (computer-based).

Arrangements to take the test may be made by writing directly to:

TOEFL, Educational Testing Service
P.O. Box 6151
Princeton, NJ 08540-6151 U.S.A.

Results of the test should be forwarded to the Office of Undergraduate Admissions. Applicants living locally should write to the Undergraduate Admissions Office (see address below) for further information concerning other test options or completion of an acceptable English composition course to clear the requirement.

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 financial obligations.

**Prerequisite Information**

Contact Undergraduate Admissions for further information concerning prerequisites for any major field or concentration. A student planning to transfer to the University of California should consult the catalog of the institution he or she is currently attending for any prerequisites that may be required for admission to the University.
educational commitments while studying in the United States. International students are considered to be nonresidents of California and are required to pay the nonresident tuition in addition to fees paid by legal residents of California.

Please direct all inquiries regarding the undergraduate admission of international students to:

Office of Undergraduate Admissions
138 Hinderaker Hall
University of California, Riverside
Riverside, CA 92521 U.S.A.
ugadmiss@pop.ucr.edu

CREDITS, TRANSCRIPTS, AND TEST SCORES

Credit for English-as-a-Second Language Course Work
Students whose first language is not English may receive up to 12 quarter-units of credit 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 UCR or another accredited English-speaking institution.

Unit Credit for Courses Taken Elsewhere
The University grants unit credit only for courses consistent with its curriculum that have been completed at other accredited colleges and universities. To be accepted for credit, the courses must be comparable to those offered at the University.

The decision regarding the acceptability of courses taken at an institution other than the University rests with the Office of Undergraduate Admissions. The decision regarding the applicability of such course work in satisfaction of degree requirements rests with the faculty of the particular school or college in which the student plans to enroll.

As an integral part of the system of public education of California, the University accepts, at full unit value, approved transfer courses completed with satisfactory grades in the community colleges of the State of California. After a student has earned 105 quarter (70 semester) units acceptable toward a University degree, no further unit credit will be granted for courses completed at a community college. Subject credit, however, may still be earned.

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

Freshman Applicants. Applicants will be notified if a preliminary high school transcript showing date of graduation, final transcript(s) for college work attempted, and official Advanced Placement or International Baccalaureate scores.

Transfer Applicants. Applicants will be notified if a preliminary transcript(s) is required. Applicants must request a final transcript from each college attended. A transcript from the last high school attended may also be required. Attendance at any other school or college after an application has been filed is considered to be part of the student's record and must be reported to the Office of Undergraduate Admissions.

NOTIFICATION OF ADMISSION
Each application is considered individually; therefore, the length of time before notification may vary depending upon the circumstances of each applicant. Most fall quarter freshman applicants are notified of their status by March 31; transfer applicants are notified by May 1. In some cases, complete transcripts of course work are required before a final decision can be made.

The target dates stated above apply to those applicants who filed during the priority period (November 1–30). Applicants filing after the priority period will be notified on a rolling basis in the spring.

When offered admission by the University, the student is asked to sign and return a Statement of Intent to Register accompanied by a nonrefundable fee of $100. This amount will be applied toward payment of University fees, provided the student registers in the quarter to which the student was admitted.

CONCURRENT ENROLLMENT
Taking courses at another college or university, including UCR Extension, while in residence at UCR is called concurrent enrollment. This is not allowed during the first quarter in residence at UCR. See Registration section for the policy regarding concurrent enrollment for continuing students.

REAPPLICATION
Application for admission is for a specific term. If the student is not eligible for admission, or is admitted and does not register, the University will require a new application and an application fee if the student wants to be admitted to another quarter. The new application will be considered in light of the admission requirements in effect and the space available on campus.

RESOURCES FOR ADMISSION
Early Academic Outreach Pre-University Service Program
Office of Relations with Schools and EOP
1120 Hinderaker Hall
(909) 787-4531 discover@pop.ucr.edu
http://www.students.ucr.edu/eop

One of the programs designed to assist disadvantaged students in making their aspiration for a college education a reality is Early Academic Outreach. Early Academic Outreach assists students attending intermediate and secondary schools. The program works closely with students, counselors, and parents in providing information on college preparation. In addition, the program offers motivational and career projects, SAT workshops, counseling, tutoring, campus tours, and summer residential programs. Early Academic Outreach utilizes University students as tutors and counselor-aides.
The Educational Opportunity Program (EOP) assists in increasing the diversity of students who enroll in and graduate from the University of California.

Students accepted at UCR through EOP receive a variety of support services coordinated to include both the academic and nonacademic experiences of university life. There are special orientations for all incoming transfer and freshmen students. The support services are provided by the Learning Center.

To apply for EOP, students must complete the UC Application for Undergraduate Admission and Scholarships and complete the appropriate questions related to EOP. In addition, the applicant is advised to discuss the reason for requesting EOP assistance in the required essay. Applicants should be sure to apply during the priority filing period — November 1–30. Application fee waivers are available to assist students for whom payment of the fee constitutes a barrier to admission. Contact the above address for information on obtaining a fee waiver.

The opportunity to enroll in UCR concurrent with the senior year of high school is available to qualified accelerated students. Admission to HS-UP is based upon a combination of criteria including grades, standardized test scores, and preparation in the field of interest.

Through HS-UP, qualified students (usually seniors) from area high schools may enroll in UCR courses, receive grades based on the same standards as full-time UCR students, and receive full University of California credit for their work.

To continue at UCR after high school graduation, a HS-UP student may enroll as a full-time student without filing another application for admission.

Services for Students with Disabilities offers preadmission counseling to prospective students to discuss available services, financial aid, housing, mobility, or other personal concerns related to attending UCR. Prospective students are encouraged to contact the office early in their planning to attend the University. For specific information about admission requirements, contact the Office of Undergraduate Admissions.

Once accepted to UCR, services available to students include registration assistance, disability related counseling, mobility assistance, academic support services (such as readers), special testing arrangements, and adaptive equipment.

The Transfer and Reentry Services Center provides a support system for current and prospective UCR transfer and reentry students. Transfer and Reentry Services offers pre-admission advising, information and referral services, quarterly orientation sessions, and peer support. Staff members and peer mentors are available by appointment and on a walk-in basis to assist with student issues and concerns.

GRADUATE ADMISSION REQUIREMENTS

For information on the requirements for admission to graduate status and application procedures, contact departmental offices or the Graduate Division.
FEES AND EXPENSES
Student expenses depend upon a great many factors which should be considered carefully before planning a budget. If financial help is needed — beyond those funds which students or their families are able to provide — that should be determined well in advance of the entering quarter. The following items are intended as a guide to planning.

University Registration Fee
The University Registration Fee is a mandatory quarterly charge made to graduate and undergraduate students for services which benefit the student and which are complementary to, but not part of, the instructional program. The University Registration Fee supports operating and capital expenses for services related to the physical and psychological health and well-being of students; social and cultural activities and programs; services related to campus life and campus community; and educational and career support services. No part is returned to students who do not carry a full program or who do not use these privileges. Graduate students on filing-fee status pay one-half of the Registration Fee.

<table>
<thead>
<tr>
<th></th>
<th>Fall Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident undergraduates:</td>
<td>$239</td>
<td>$237</td>
<td>$237</td>
</tr>
<tr>
<td>Resident graduate students (except professional school students):</td>
<td>$906</td>
<td>$905</td>
<td>$905</td>
</tr>
<tr>
<td>All nonresident students (undergraduate and graduate) and professional school students:</td>
<td>$964</td>
<td>$966</td>
<td>$966</td>
</tr>
</tbody>
</table>

Educational Fee
All full-time graduate and undergraduate students are required to pay the quarterly Educational Fee. Undergraduate students whose enrollment for the terms is approved by the dean of their college for 10 quarter units or fewer of academic credit shall pay 50 percent of the Educational Fee per quarter. This determination is made as of the close of the fifteenth day of instruction. Reduction of units to 10 or fewer after the fifteenth day of instruction does not reduce the fee.

<table>
<thead>
<tr>
<th></th>
<th>Fall Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident undergraduates:</td>
<td>$906</td>
<td>$905</td>
<td>$905</td>
</tr>
<tr>
<td>Resident graduate students (except professional school students):</td>
<td>$964</td>
<td>$966</td>
<td>$966</td>
</tr>
<tr>
<td>All nonresident students (undergraduate and graduate) and professional school students:</td>
<td>$1,028</td>
<td>$1,029</td>
<td>$1,029</td>
</tr>
</tbody>
</table>

Student-Assessed Fees
Recreation Center Fee. The quarterly Recreation Center Fee is assessed to pay the costs of construction, maintenance, and operation of the Recreation Center and is required of all students $59

Division I Fee. The quarterly Division I fee is mandatory for all undergraduates and is used to support development and initiation of NCAA Division I athletic programs $35

Student Center Fee. The Student Center Fee is assessed to help pay the costs of construction, maintenance, and operation of the Student Center (Commons) and is required of all students $20

ASUCR Membership Fee. The quarterly ASUCR Membership Fee is required for all undergraduate students and optional for graduate students. The fee covers Associated Students of UCR funding for campus clubs and organizations, KUCR (on-campus radio station), legal aid pro-
Required Student Fees — Fall 2000

<table>
<thead>
<tr>
<th>Category</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Registration Fee</td>
<td>$239.00</td>
<td>$239.00</td>
</tr>
<tr>
<td>Educational Fee</td>
<td>906.00</td>
<td>1,028.00</td>
</tr>
<tr>
<td>Recreation Center Fee</td>
<td>59.00</td>
<td>59.00</td>
</tr>
<tr>
<td>Division I Fee</td>
<td>35.00</td>
<td>35.00</td>
</tr>
<tr>
<td>Student Center (Commons) Fee</td>
<td>20.00</td>
<td>20.00</td>
</tr>
<tr>
<td>ASUCR Fee</td>
<td>15.50</td>
<td>15.50</td>
</tr>
<tr>
<td>Student Services Fee</td>
<td>6.00</td>
<td>6.00</td>
</tr>
<tr>
<td>ASPB Fee</td>
<td>4.50</td>
<td>4.50</td>
</tr>
<tr>
<td>EO P Fee</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>UC Student Association Fee</td>
<td>.75</td>
<td>.75</td>
</tr>
<tr>
<td><strong>Total—California Residents</strong></td>
<td>$1,287.25</td>
<td>$1,287.25</td>
</tr>
</tbody>
</table>

Note: Nonresident tuition includes a $3,416.00 nonresident tuition fee.

Total—Nonresidents $4,825.25

UCSA Fee. The quarterly UCSA fee is required of all undergraduate students. It funds the University of California Student Association (UCSA), which represents student interests to the Regents of the University and the Office of the President.................................$.75

Course Materials Fee

The Course Materials Fee covers the cost of course materials to be consumed, retained, or used by the student; the special costs associated with the use of University-owned equipment; or the cost of other materials or services necessary to provide a special supplemental education experience of direct benefit to the student. This fee is currently assessed for enrollment in certain laboratory courses at the University; these are identified in the quarterly Schedule of Classes.................................................$40

Health Insurance and Disability Fees

Undergraduate Student and Dependent Health Insurance. Undergraduate health insurance is optional. Rates vary with the period of coverage selected.

Graduate and Professional Student Health Insurance Fee. The quarterly Graduate and Professional Student Health Insurance Fee is mandatory for graduate students. Students who can demonstrate comparable insurance coverage from another source may apply to be exempted from $295 of the total fee. Premium remissions may apply for some graduate students with academic appointments and fellowships. For information on waivers and exemptions, see Student and Dependent Health Insurance under Campus Health Center in the Student Services section of this catalog.........................................................$314

Medical School Disability Insurance Fee. The Medical School Disability Insurance Fee is assessed fall quarter to all medical school students including students in the fourth and fifth years of the UCR/UCLA Biomedical Sciences Program.............................................$61

Professional School Fees

Students in professional school programs (MBA and medical school students, including students in the fourth and fifth years of the UCR/UCLA Biomedical Sciences Program) are assessed a quarterly fee.

Professional school students admitted to UCR for the 2000-2001, 1999-2000, 1998-99 and 1997-98 academic years are assessed the following quarterly Professional School Fees:

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Quarter</td>
<td>$1,668</td>
</tr>
<tr>
<td>Winter Quarter</td>
<td>$1,668</td>
</tr>
<tr>
<td>Spring Quarter</td>
<td>$1,666</td>
</tr>
</tbody>
</table>

Continuing professional school students admitted to UCR during the 1996-97 academic year are assessed the following quarterly Professional School Fees:

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Quarter</td>
<td>$1,334</td>
</tr>
<tr>
<td>Winter Quarter</td>
<td>$1,333</td>
</tr>
<tr>
<td>Spring Quarter</td>
<td>$1,333</td>
</tr>
</tbody>
</table>

All medical school students are assessed the following quarterly Medical School Student Fees:

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Quarter</td>
<td>$125</td>
</tr>
<tr>
<td>Winter Quarter</td>
<td>$125</td>
</tr>
<tr>
<td>Spring Quarter</td>
<td>$125</td>
</tr>
</tbody>
</table>
**Nonresident Tuition**

In addition to the fees listed above, nonresidents of California are charged tuition. To determine whether tuition is applicable, see appendix A: Residence for Tuition Purposes. All questions concerning residency should be referred to the residence affairs officer in the Office of the Registrar. Nonresident tuition for undergraduate students enrolled in 10 quarter units or fewer of course instruction is assessed at 50 percent of the Nonresident Tuition Fee.

All Ph.D. students who are considered nonresidents for tuition purposes and are advanced to candidacy as of the first day of Fall Quarter 2000 will receive a 75 percent reduction of the nonresident tuition for a maximum of three calendar years. Please see Fee Exemptions and Reductions in this catalog for additional information.

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Quarter</td>
<td>$3,416</td>
</tr>
<tr>
<td>Winter Quarter</td>
<td>$3,414</td>
</tr>
<tr>
<td>Spring Quarter</td>
<td>$3,414</td>
</tr>
</tbody>
</table>

**Residence Classification**

Students pay Nonresident Tuition if they have not been living in California for more than one year immediately prior to the residence determination date for the term in which they propose to register at UCR. Along with the criterion physical presence, the other criteria are intent and financial independence. Information on these three criteria is provided in appendix A.

Residence classification of new, readmitted, and continuing students is made for each term, and at each campus of the University of California. Classifications are based on evidence presented in, and supporting, each student’s Statement of Legal Residence. All Statement of Legal Residence forms are signed under oath by students and, if further information is required, it may be required under oath, by declaration or affidavit.

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. Students classified as nonresidents shall retain that status until they apply for, and receive, a new classification. Students planning to file for residence status after their first year should talk with the residence affairs officer well before the appropriate residence determination date, preferably during their first few weeks in California. Students may apply for classification as California residents as soon as they meet all three criteria for residence and, if successful in changing their status, would not pay tuition for subsequent quarters if they continued to meet the criteria.

**Residence Determination.** All questions concerning residency are referred to the residence affairs officer in the Office of the Registrar. No other campus personnel are authorized to supply information regarding residence requirements for tuition purposes. Students wishing to appeal a final decision on residence classification by the residence affairs officer are assisted and referred to the appropriate member of the General Counsel’s Office.

**Late Fees**

Late fees are assessed to students who fail to make payments or file forms by published deadlines. Late enrollment and late registration fees may be waived only for the following reasons: student health problems verified by a physician; death in the family; or a verified administrative error on the part of the University.

**Fee Exemptions and Reductions**

**Fee Exemption.**

Dependents of Veterans. Under the California Education Code, Section 32320, certain dependents of U.S. veterans whose death or disability was service-connected may be eligible for an exemption from the University Registration Fee, Educational Fee, and, if applicable, Professional School Fees. Students must be California residents to qualify for the exemption. To determine residency, see appendix A: Residence for Tuition Purposes. Claims for exemption of fees may be considered only if the claim is presented to the University during the fiscal year (July 1 through June 30) to which the claim applies. For further information, contact Student Special Services, 125 Costo Hall, (909) 787-3861.

Surviving Children of Law Enforcement or Fire Suppression Officers. A student who is a child of a resident law enforcement officer or firefighter killed on active duty shall be exempt from nonresident tuition and fees under Section 68120 of the California Education Code. For further information contact the residence affairs officer in the Office of the Registrar, 1100 Hinderaker Hall.

Students who believe they are entitled to one of these fee exemptions must apply through the appropriate office above in advance of their registration.

**Student Athletes in Training.** Any amateur student athlete in training at the United States Olympic Training Center in Chula Vista is entitled to resident classification for tuition purposes until he or she has resided in the state the minimum time necessary to become a resident. “Amateur student athlete,” for purposes of this section, means any student who meets the eligibility standards established by the national governing body for the sport in which the athlete competes.

**Fee Reduction.**

Employees. A regular status employee who meets the admission requirements of the University is eligible for a two-thirds reduction of both the University Registration Fee and University Educational Fee for up to 9 units or three regular-session University courses per quarter or semester, whichever is greater. An employee so registered is ineligible for the services and facilities of the counseling center, gymnasiums, or the student health services, other than those to which the employee may be otherwise entitled.

Doctoral Students Advanced to Candidacy. All students who are considered nonresidents for tuition purposes and are advanced to candidacy for the Ph.D. as of the first day of Fall 2000 will receive a reduction of 75 percent of the nonresident tuition. Each student is eligible for a maximum of three calendar years. Time spent not registered (withdrawn, on leave, or on filing fee status) will count toward the three-year total unless the Graduate Dean grants an exception. A student must be advanced by the first day of the academic term to qualify for that term. Students who are currently advanced will qualify for the reduction if they have not been advanced for more than three years. For example, if a student advanced Fall 2000, the student will be qualified for the reduction for 2000-2001, 2001-2002, and 2002-2003. The student must pay full fees if not finished by Spring 2003.
Estimated Expenses

Additional expenses for students vary depending on individual needs and prevailing conditions. An average budget for a single student might include the following items, calculated on a three-quarter (nine-month) basis:

**Books and Supplies.** Normally about $1,200 a year average, but books and supplies may vary considerably depending on a student’s curriculum. Consult departments for further details. ......................... $1,200

**Living Expenses.** The range of living expenses includes costs for on- and off-campus housing. ......................... $3,900-$7,200

**Entertainment and Miscellaneous.** A student should budget for clothing, laundry, cleaning, transportation, medical, and personal needs. The campus offers a variety of concerts and other cultural activities at special student prices. ......................... $1,750

**Parking Charge.** All vehicles regularly on the campus are subject to annual registration and parking charges. Parking costs vary depending on the location of the lots selected. Many students purchase gold permits, which cost $28 per month, $66 per quarter, or $198 annually. For more information on the 2000-2001 academic year charges for parking permits, contact Transportation and Parking Services at (909) 787-4395 or [http://parking.ucr.edu](http://parking.ucr.edu).

**Student and Dependent Health Insurance (Undergraduate).** Rates for student health insurance vary with the period of coverage selected.

Deferred Payment Plan

The Deferred Payment Plan (DPP) offers students an opportunity to pay their quarterly fees and tuition in three monthly installments. For each quarter of participation, a new application must be submitted with a processing fee of $25 for resident students and $40 for nonresident students.

Refunds

Students who withdraw before the end of a quarter may be eligible to receive refunds for some fees. A withdrawal petition must be obtained from the Student Affairs Office in the student’s college or from the Graduate Division Office. In accordence with federal regulations, refunds to financial aid recipients are first applied to repayment of aid disbursed.

The effective date for determining a refund of fees is the date the student files an official notice of withdrawal with the University. It is presumed that no University services will be provided to the student after that date.

Beginning the second day of instruction, the University Registration Fee is refunded on a prorated basis except for the $10 service charge or the $100 Statement of Intent to Register deposit paid by undergraduates. Other eligible fees paid are refunded in full. New students receiving Title IV federal financial aid who withdraw during their first quarter at UCR receive a prorated refund if they withdraw by the end of the sixth week of the quarter.

Refunds for All Other Students

Refunds for all continuing and readmitted students are as follows:

**Prior To and Including Day 1.** Prior to and including the first day of instruction, the University Registration Fee is refunded except for a $10 service charge or the $100 Statement of Intent to Register deposit paid by undergraduates. Other eligible fees paid are refunded in full.

**Day 2 and After.** Beginning the second day of instruction, the University Registration Fee is refunded on a prorated basis except for the $100 Statement of Intent to Register deposit. Refunds of other eligible fees are prorated as shown in the Schedule of Refunds table on this page. New students receiving Title IV federal financial aid who withdraw during their first quarter at UCR receive a prorated refund if they withdraw by the end of the sixth week of the quarter.

Refunds for New Students Receiving Federal Financial Aid

Fee refunds for new students receiving Title IV federal financial aid are as follows:

**Prior To and Including Day 1.** Prior to and including the first day of instruction, the University Registration Fee is refunded except for a $10 service charge or the $100 Statement of Intent to Register deposit paid by undergraduates. Other eligible fees paid are refunded in full.

**Day 2 and After.** Beginning the second day of instruction, the University Registration Fee is refunded except for a $10 service charge or the $100 Statement of Intent to Register deposit. Other eligible fees paid are refunded in full. New students receiving Title IV federal financial aid who withdraw during their first quarter at UCR receive a prorated refund if they withdraw by the end of the sixth week of the quarter.

Distribution Formula for Institutional Refunds

If a Housing or Registration refund is due to a student under UCR’s refund policy and the student received financial aid under any aid program other than Federal Work-Study, the refund shall be returned to student assistance programs in the following order: outstanding balances on Federal Direct Unsubsidized Stafford Loan, Federal Direct Stafford Loan, Federal Perkins Loan, Federal Direct PLUS Loan, Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, Cal Grant A or B, University of California Student Loan, Grant-in-Aid State, other institutional grants or scholarships. The portion of a refund allocated to a program may not exceed the amount a student received from that program.

### Schedule of Refunds

<table>
<thead>
<tr>
<th>Days</th>
<th>New Students Receiving Federal Financial Aid</th>
<th>All Other Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior To and Including Day 1.</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>1st day of instruction</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2-7</td>
<td>90</td>
<td>90</td>
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<tr>
<td>8-14</td>
<td>80</td>
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<td>15-18</td>
<td>70</td>
<td>50</td>
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<td>19-21</td>
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<td>25</td>
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<tr>
<td>22-28</td>
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<td>25</td>
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<tr>
<td>29-35</td>
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<td>25</td>
</tr>
<tr>
<td>36-42</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>43 or more</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Prior To and Including Day 1. Prior to and including the first day of instruction, the University Registration Fee is refunded except for a $10 service charge or the $100 Statement of Intent to Register deposit paid by undergraduates. Other eligible fees paid are refunded in full.

Day 2 and After. Beginning the second day of instruction, the University Registration Fee is refunded on a prorated basis except for the $100 Statement of Intent to Register deposit. Refunds of other eligible fees are prorated as shown in the Schedule of Refunds table on this page. New students receiving Title IV federal financial aid who withdraw during their first quarter at UCR receive a prorated refund if they withdraw by the end of the sixth week of the quarter.

**Refunds for All Other Students**

Refunds for all continuing and readmitted students are as follows:

**Prior To and Including Day 1.** Prior to and including the first day of instruction, eligible fees paid are refunded in full except for a $10 service charge.

**Day 2 and After.** Beginning the second day of instruction, a prorated refund is given for eligible fees paid.

If a student withdraws during a quarter, federal regulations require UCR to calculate the amount of federal financial aid that has been “earned” for the period he or she attended. If the student withdraws prior to completing 60% of the quarter, a pro rata portion of the aid must be returned to the federal government. Any portion of unearned aid that must be returned to federal aid programs by UCR will be deducted from the amount of the tuition and fee and/or housing refund. If the amount UCR must return to federal aid programs exceeds the amount of the student’s institutional refund, the student’s account may be billed. More information regarding the return of Title IV federal aid requirements is available at [http://www.finaid.ucr.edu](http://www.finaid.ucr.edu).
FINANCIAL SUPPORT

The Financial Aid Office assists students with meeting educational expenses that cannot be met from personal resources. To obtain financial aid students must file an application with the Financial Aid Office yearly. Applications are available beginning December 1 for the upcoming academic year. All applicants must submit the Free Application for Federal Student Aid (FAFSA) no later than March 2 prior to the award year in order to receive priority consideration for funds awarded by UCR. New Cal Grant applicants must also submit a GPA Verification Form to the California Student Aid Commission no later than March 2. Continuing undergraduates applying for UCR scholarships must submit the UCR Continuing Student Undergraduate Scholarship Application by February 1. Entering students apply for scholarships with the Application for Undergraduate Admission and Scholarships. Students applying for other grants, loans, and work-study should apply as early as possible. Applications are accepted year-round, with awards to late applicants based on fund availability. Funding cannot be guaranteed to students whose FAFSAs are submitted after March 2.

An analysis of the FAFSA is required to determine the amount that a student’s parents, the student, and the student’s spouse can be expected to contribute toward the cost of the student’s education. The University expects the student and parent (if the student is dependent), or spouse (if the student is married), to contribute toward the educational costs to every extent possible. The FAFSA is available from the Financial Aid Office. In addition to filing the FAFSA, applicants for financial aid may also be required to submit supporting materials that the Financial Aid Office uses to determine each student’s financial need.

All undergraduate financial aid applicants are also required to apply for California State Grants (Cal Grant A and/or B), by completing the FAFSA and GPA Verification Form and submitting them by the March 2 filing deadline. If the California Student Aid Commission determines that a student is ineligible for a Cal Grant A or Cal Grant B award, the grant may be replaced with a Federal Direct Stafford Loan in the financial aid package from UCR.

International students are expected to have the necessary funds to cover their entire period of study. The Financial Aid Office does not have funds available to offer assistance to international students. Assistance is not available to students on Special or Limited status or to those enrolled in UCR Extension. An exception is made for students admitted on Limited Status who are required to take prerequisite course work for graduate admission into the Graduate Division. Students who fall into this category must submit documentation from the Graduate Admissions Office confirming that they are taking prerequisite course work for graduate admission.

For information on graduate student support, see Financial Support in the Graduate Studies section of this catalog.

Grants, Loans, Employment, and Scholarships

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

Grants

- The Federal Pell Grant program is federally funded and may provide awards up to a maximum of $3,300 for the academic year. To be eligible, an applicant must be a United States citizen or eligible noncitizen, must be enrolled as an undergraduate, and must not have previously received a bachelor’s degree. An exception is available for eligible students enrolled in the teaching credential program in the Graduate School of Education. Students apply for the Pell Grant on the Free Application for Federal Student Aid (FAFSA).

- Federal Supplemental Education Opportunity Grants are federally funded, need-based grants available only to U.S. citizens and eligible noncitizen undergraduate students who have not previously received a bachelor’s degree.

- The State of California—Cal Grant A and B Program. The Cal Grant A program provides awards ranging from $100 to $3,429 for the academic year. To be eligible, new applicants must be California residents. Awards are based on academic achievement and financial need.

- The Cal Grant B program provides awards ranging from $100 to $4,839. To be eligible, applicants must be California residents, demonstrate financial need, and be entering college for the first time or not have completed more than one semester of college work. The awards are for students from disadvantaged families.

UCR Grant awards are offered to undergraduates with the greatest financial need whenever guidelines and funding levels permit.

Loans

Normally, one or more types of loans are included in each combination of aid offered to a student. Borrowers must be aware of their repayment obligations.

- Federal Direct Stafford Loans are available to both undergraduate and graduate students who are U.S. citizens or eligible noncitizens. The maximum amount that may be borrowed under this program is $2,625 per year for students in their first year of undergraduate study (0–44 quarter units), $3,500 per year for the second year of undergraduate study (45–89 quarter units), and $5,500 per year after reaching junior status (90 or more quarter units), up to an aggregate undergraduate maximum of $23,000. Graduate students may borrow up to $8,500 per year up to an aggregate maximum of $65,500 for combined undergraduate and graduate borrowing. Teaching credential students are limited to the $5,500 annual maximum for fifth year undergraduate students according to federal regulations.

In addition to these amounts, independent students may borrow $4,000 for the first or second year of undergraduate study (0–89 quarter units), or $5,000 for the third or fourth year of undergraduate study (90 or more quarter units) or teaching credential study, and $10,000 for graduate study from the Federal Direct Unsubsidized Stafford Loan Program. Independent undergraduate and teaching credential students may borrow an aggregate of $46,000 in combined Federal Direct Subsidized and Unsubsidized Stafford loans, and graduate students may borrow a combined aggregate maximum of $138,500, including undergraduate borrowing.

An origination fee of 3 percent is deducted from the amount of the loan prior to disbursement. The interest rate on Federal Direct Stafford Loans is variable and is established annually. The rate for new borrowers in 2000-2001 is 7.59%. Interest on a Federal Direct Unsubsidized Stafford Loan accrues immediately and must be paid while in school or added back to the principal amount borrowed. Minimum monthly repayment of $50 per month begins six months after students cease to be enrolled at least half-time. Borrowers can choose a repayment plan based on their financial circumstances with repayment periods ranging from up to 10 years for standard fixed monthly repayment, to up to a period of 12 to 30 years under alternate repayment options. Information on repayment plans is available at [http://www.ed.gov/offices/OPE/DirectLoan/calc.html](http://www.ed.gov/offices/OPE/DirectLoan/calc.html).

- Federal Perkins Loans are available to undergraduate students. These loans are awarded to regularly enrolled students who are U.S. citizens or eligible noncitizens. The amount a student may borrow is determined by financial need but may not exceed $4,000 per year and...
a total of $20,000 for undergraduates. Repayment may be extended
over a 10-year period. Interest is 5 percent on the unpaid balance,
beginning nine months after students cease to be enrolled at least half-
time.

- **University Loans.** A limited number of University Loans are avail-
able to undergraduate students for up to $5,500. Awards are made
subject to the availability of funds. The amount a student may borrow
is determined by financial need. Interest is 5 percent on the unpaid
balance; repayment may be made over a period of not more than 10
years, beginning 6 months after the date on which the borrower ceases
to be enrolled at least half-time. Co-signatures are required.

- **Emergency Student Loan Fund.** In addition to the long-term
loans from financial aid programs mentioned above, UCR has an
emergency student loan fund. This loan, which does not bear interest,
is of a short-term nature to cover emergency needs of up to $200.
Students may borrow up to three times a year.

**Employment**

Federal Work-Study is awarded to students with demonstrated financial
need. Work-study awards enable students to reduce the amount of loan
indebtedness which they may incur while attending the University.

A variety of work opportunities are available through the UCR Career
Services Center in either on-campus or off-campus jobs at nonprofit and
community services agencies.

**Scholarships**

Scholarship awards are based on a student’s academic achievements
and, except for honorary scholarships, on need. Scholarships are con-
sidered gift assistance. Most scholarships available through the Financial Aid Office are based on
financial need. Other undergraduate scholarships are offered to entering
and continuing undergraduates who show evidence of high scholastic
attainment. Applicants must meet all priority deadlines for consideration.
Non-need based scholarship awards, including Alumni and National
Merit, are available to a limited number of undergraduate students.
Financial need is not required, but award amounts may vary for appli-
cants with documented financial need and for applicants who do not
prove financial need. Awards range from $750 to $2,000.

- **Regents’ scholarships.** One of the highest honors conferred upon UC
students, are awarded on the basis of academic excellence and excep-
tional promise, without reference to financial need. Students are eligible
upon graduation from high school. The appointments run for four years
for students entering from high school. Regents’ Scholars receive an
honorarium each year of appointment. Students with financial need may
also receive awards to offset any loan or work obligation up to the
award’s annual limit, as long as they comply with all published applica-
tion priority deadlines.

- **Chancellor’s Performance Awards.** Information on Chan-
celler’s Performance Awards may be obtained from the departments
of Art, Creative Writing, Dance, Music, Political Science, and Theatre.

- **Engineering Scholarships.** Information on scholarships in the
field of Engineering may be obtained from the College of Engineering
Student Affairs Office.

- **Natural and Agricultural Scholarships.** Information on scholar-
ships in the field of Natural and Agricultural Sciences may be
obtained from the College of Natural and Agricultural Sciences Student
Affairs Office.

- **Departmental Scholarships.** Some scholarships are available
through academic departments. For more information, students
should contact their department.

- **Graduate Fellowships and Assistantships.** For information on
graduate fellowships and assistantships refer to the Graduate Studies sec-
tion of this catalog or contact the Office of the Graduate Division.

- **Undergraduate Research Support.** UCR has a tradition of
undergraduate and faculty interaction with a range of undergraduate
student grants available during the academic year. The grants are
designed to encourage undergraduates to engage in research, field-
work, or other creative activity under the guidance of a faculty mem-
ber for either one, two, or three academic terms. All awards are for
meeting the costs of conducting a project and cannot be used as a stu-
dent salary or scholarship aid.

Student grant proposals may be initiated directly by students after
approaching a faculty member for sponsorship or by faculty suggest-
ing projects to advanced undergraduates. Application forms and grant
criteria are available through any academic department or the Office
of Instructional Development, 111 University Office Building.

- **Student Minigrants** are designed for one-quarter projects. Student
Minigrants are funded up to $400, with no restrictions regarding
undergraduate class level or grade point average (GPA). Awards are
made each quarter.

- **Senior Student Grants** are awarded for two-quarter projects.
Senior Student Grants are funded up to $700. Applications are submit-
ted in the fall quarter, and grants are awarded for winter and spring
quarters only. Senior status at the time of award is required. Minimum
GPA requirements are 3.30 in the major and 3.00 overall.

- **President’s and UCR Foundation Fellowships** are usually
awarded to juniors for year-long projects undertaken in the senior
year. Applications are submitted the preceding spring quarter.
Funding up to $1,000 is offered. A GPA of at least 3.50 in a student’s
major is required.

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Eileen Bautista practices the taiko drum.
REGISTRATION AND ENROLLMENT

Registration

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 section of this catalog. The quarterly Schedule of Classes, mailed to all new and readmitted undergraduate students and available to continuing students at the ASCR Exchange and at http://www.students.ucr.edu, lists classes, instructors, class hours, and class locations. The Schedule of Classes contains detailed information on registration and where to obtain academic advising.

Official registration consists of two steps

1. Enrollment in classes
2. Payment of fees

All new and readmitted students must also file a Statement of Legal Residence and obtain a photo ID card. New undergraduates may be required to take certain placement and diagnostic examinations before classes begin.

Holds

Students may have holds placed on their registration, financial aid, or release of academic transcripts for the following reasons:

1. Failure to comply with admission provisions
2. Failure to settle financial obligations with the University
3. Failure to respond to official notices
4. Failure to submit requested documents

Each student who becomes subject to a hold action is given advance notice and ample time to respond. In all cases, students must secure a release from the office initiating the hold action before they may enroll in courses.

Enrollment in Classes

Web and Telephone Enrollment:

Students may enroll in classes using UCR’s Web and telephone service (PAWS) or telephone service (UCR STAR). New students receive information about PAWS, UCR STAR, and enrollment from the Office of the Registrar approximately one month prior to their scheduled enrollment appointment. Continuing students enroll via PAWS or UCR STAR during assigned appointments using materials they pick up from their academic advisors. Students should refer to the quarterly Schedule of Classes for complete course enrollment information.

Adding and Dropping Courses

After scheduled Web and telephone enrollment periods, students follow the in-person add/drop/change procedures and deadlines as published in the quarterly Schedule of Classes. Students are not automatically dropped from courses for nonattendance and will receive grades in all classes in which they are enrolled whether they attend or not. Students must file an add/drop form at the Office of the Registrar or drop the class using PAWS or UCR STAR to avoid an “F” grade.

Payment of Fees

By mail or in person (until 4 p.m.)
Cashier’s Office, 1127 Hinderaker Hall, or
Housing Cashier’s Office, 3595 Canyon Crest Drive
Deadline dates are published in the quarterly Schedule of Classes

The University Registration Fee, Educational Fee, student-assessed fees, Nonresident Tuition (if applicable), Professional School Fees (if applicable), and mandatory health insurance (if applicable) must be paid for the student to be registered. Student Business Services sends a monthly Statement of Account to all students the month before fees/tuition are due, the month that they are due, and/or when there is a balance owing on their account for any miscellaneous charges. In the event that fees/tuition are paid in full the first month billed and no miscellaneous charges are owing, then the following month a zero balance statement will be sent to confirm payment of fees/tuition. Registration fees are due and payable upon receipt of the Statement of Account and are always due before instruction begins.

Students must be enrolled in courses for financial aid to be disbursed. Student financial aid awarded to pay registration fees is credited to the individual student’s account and appears on the Statement of Account as a payment or credit. Students whose registration fees are partially paid by financial aid funds are required to pay the balance in order to complete their registration. Fee payment is not required to enroll through PAWS or UCR STAR. However, failure to pay fees or enroll in courses by deadlines can result in loss of courses or lapse of student status. Lapse of student status means loss of all credit for courses for the quarter and loss of student privileges, such as financial aid awards and student services.

Health Evaluation

Each student who enters UCR for the first time, or reenters after an absence of more than one year, is required to complete a medical history form. The form is mailed out by the Campus Health Center. Should one not be received by two weeks prior to the beginning of the quarter, it may be obtained by telephoning (909) 787-3031, or by writing the Campus Health Center. The information is not intended to exclude students from school but instead to better serve them while they are here, to make sure that there are no health hazards to themselves or to others, and to permit their activities to be adjusted so that they can make the most of their opportunities at the University.

Before coming to the University, all students are urged to have their own physician and dentist examine them for fitness to carry on university work and to have all defects capable of being remedied, such as dental cavities, defective hearing, or defective eyesight, corrected. The health center suggests that students be tested for tuberculosis and sexually transmitted diseases within six months prior to matriculation. This may be done by private physicians or public agencies. If the tests are performed, the results should be included with the medical history form which is to be mailed to the Campus Health Center in the envelope provided.

Hepatitis B. Students who are 18 or younger when they first enroll in the University of California must provide proof of vaccination against the Hepatitis B virus, as required by the California State Health and Safety Code.

Students may obtain the series of three immunizations (spaced over a six-month period) either from their own doctor or from the Campus Health Center. Cost at the Campus Health Center is $37 per shot. Call the Center at (909) 787-3031 for more information.

Faculty Advisement

Program counseling by a faculty member in their field of specialization is available to all students. Students should consult the appropriate section concerning the faculty advising program in their college.

Depending on their interests, undeclared majors can be advised in the College of Humanities, Arts, and Social Sciences; the College of Natural and Agricultural Sciences; or the College of Engineering. Appointments can be made by contacting the respective Student Affairs offices at each college.

Students should become familiar with the University, College, and major requirements, since completion of all graduation requirements is their responsibility.
Candidacy for Degrees/ Application for Graduation

Undergraduate students are responsible for informing their college office of their candidacy for the bachelor’s degree. Students in the College of Engineering should check with the Student Affairs Office at the beginning of their final quarter to be certain they are on the appropriate degree list. Students in the College of Humanities, Arts, and Social Sciences and in the College of Natural and Agricultural Sciences should check with their departmental advisor at the beginning of their senior year and with the Student Affairs Office at the beginning of their final quarter to be certain they have met all requirements for the degree and are on the appropriate degree list.

Students must file applications for graduation with their college or with the Graduate Division. Application deadlines for undergraduate and graduate students are listed in the Calendar section of the quarterly Schedule of Classes.

Information regarding candidacy for advanced degrees may be found in the Graduate Studies section of this catalog.

Change of Address

Students who change their local, permanent, or billing address should notify the Office of the Registrar in writing. Change-of-address forms are available at the Office of the Registrar, 1100 Hinderaker Hall, and as a tear-out form in the Schedule of Classes. Students may also update their address information online on PAWS.

Part-Time Study

Undergraduates. Part-time study (less than 12 units) is available to undergraduate students who find it difficult to enroll full time because of health problems, family and home responsibilities, or occupational and financial need. Students undertaking an approved course load of 10 units or fewer in any quarter receive a 50 percent reduction in the Educational Fee for that quarter. Students considering part-time study should discuss their plans with the associate dean of their college, whose approval is required.

Graduates. In some programs, half-time study is possible for graduate students who for reasons of occupation (i.e., full-time employment), unusual family responsibilities, or health reasons are not able to attend full time. A half-time student may not enroll for more than 6 units at any level. Graduate students who are approved for this program receive a refund of one-half of the Educational Fee, one-half of the Nonresident Tuition (if applicable), and one-half of the MBA Student Fee (if applicable). For further details and an application, contact the Graduate Division.

Concurrent Enrollment Programs

UCR credit for any course taken at another college institution, including UCR Extension, while the student is in residence at UCR is called credit from concurrent enrollment. Credit is normally awarded only under unusual circumstances or through the Cross Registration Program described below during the regular academic year and only with prior approval of the dean of the UCR college in which the student is enrolled. UCR Extension students taking regular-session UCR courses through concurrent enrollment may receive grade points as well as unit credit, should they continue in or be subsequently admitted or readmitted to regular UCR student status. A transcript of the work must be submitted to the Office of Undergraduate Admissions.

Courses taken elsewhere during the summer by a UCR student do not require prior approval to receive UCR credit even if the student is not in residence at UCR during that summer.

Regular Summer Sessions courses taken at UCR are credited automatically to the UCR academic record of any student enrolled in the regular academic year. A UCR student may request unit credit toward graduation for courses taken in summer session at other UC campuses by submitting a transcript of the work to the Office of Undergraduate Admissions.

Cross Enrollment

The California Education Code Sections 66750 through 66756, commonly referred to as Senate Bill 1914 (Killea), permits undergraduate students enrolled in any campus of the California Community Colleges, the California State University, or the University of California to enroll without formal admission in a maximum of one course per academic term at a campus of either of the other systems on a space-available basis at the discretion of the appropriate campus authorities on both campuses. At UC campuses, the beginning of the third week of instruction has been designated as the date by which an instructor can determine when space is available to accommodate a student seeking to enroll on this basis. (Normally instructors in all segments permit students to attend classes until their final course registration has been certified.) Cross enrollment at another campus within the same system is excluded, as is enrollment in precollege courses. Students who seek to cross enroll under this program must have met all of the following requirements:

1. Completed at least one term at their home campus as a matriculated student
2. Enrolled for a minimum of six units at their home campus for the current term
3. Earned a cumulative grade point average of 2.00
4. Paid appropriate fees and any applicable tuition at their home campus for the current term
5. Completed appropriate academic preparation for the desired course, as determined by the host campus, consistent with the standards applied to regularly enrolled students
6. Have been classified as a California resident by their home campus

Both schools must be participating in this program before a student can take a course at an another institution for the $10 cross enrollment fee. Additional information and cross enrollment application forms are available at the Office of the Registrar, 1100 Hinderaker Hall.

Cross Registration

The Cross Registration Program allows a full-time UCR undergraduate student who has officially declared a major and who is in good academic standing to simultaneously enroll at California State University, San Bernardino for no more than one course per quarter. The program is designed for students to take classes not available at UCR. Approvals are required from the student’s academic advisor, college dean, and the Registrar. Application forms and deadline information may be obtained from the Office of the Registrar, 1100 Hinderaker Hall.

Simultaneous Enrollment

Undergraduate students may enroll, without formal admission and without payment of additional University fees, in courses at another UC campus on a space-available basis at the discretion of the appropriate campus authorities on both campuses. A student is qualified for simultaneous enrollment if the student has met all of the following requirements:
Withdrawals and Leaves of Absence
An undergraduate student who wishes to terminate work in the University during a current quarter, officially and without scholarship penalty, must initiate an application for withdrawal in the office of the dean of the student’s college. Also, the student must settle all accounts due and return any University property such as books, keys, laboratory equipment, and uniforms. After the first few weeks of the quarter, such petitions are granted only under exceptional circumstances.

A student who withdraws is no longer considered a continuing student. A student wishing to return to the University must apply for readmission at least six weeks prior to the beginning of the quarter of enrollment in order to be sure of registration without late fees.

Students who withdraw from the University without authorization may receive grades of “F” in all courses in which they are enrolled. Further, the Special Services Office is required to notify the Department of Veteran’s Affairs when any student fails, receives no credit, or withdraws from all subjects undertaken.

The Planned Educational Leave Program (PELP) at UCR is designed for undergraduate students who want to interrupt their regular education for one year or less while clarifying educational goals, gaining practical experiences away from campus, or in other ways enhancing the prospect of successful completion of an academic program. A student must have completed at least one quarter of course work at UCR and be in good academic standing to qualify for PELP. Students holding F-1 visas are unable to participate in this program. Information on PELP is available in the office of the dean of the student’s college, the Counseling Center, and the Office of the Registrar.

The Planned University Leave Program (PULP) is designed for undergraduate students who plan to interrupt their education at the University of California in order to study at another academic institution. Students interested in pursuing their education abroad (but not in the UC Education Abroad Program) should consult the International Services Center where forms are available. A student planning to attend a postsecondary institution in the United States should consult the dean’s office of the student’s college.

Graduate students who wish to withdraw or apply for a leave of absence should contact the Office of the Dean of the Graduate Division.

Readmission
Undergraduate students who wish to return to UCR must file an application for readmission with the Office of the Registrar at least six weeks prior to the quarter of proposed registration. A nonrefundable application fee of $40 is charged. Approval of the dean of the student’s college or division is required for readmission. Students dismissed or not in good standing may be required to meet with the appropriate dean.

Readmission of students disqualified for other than scholarship is subject to approval of the Vice Chancellor, Student Services and Enrollment.

Transcripts from other institutions, including University Extension, attended during a student’s absence must be filed with the Undergraduate Admissions Office at least six weeks prior to the quarter of readmission. Students who were not registered during the fall, winter, or spring quarter immediately prior to their expected graduation must file an application for readmission with the Office of the Registrar.

Graduate students desiring readmission or termination of leaves of absence should contact the Office of the Dean of the Graduate Division.

Student Records and Transcripts
The Office of the Registrar prepares and permanently retains records of students’ academic work at UCR for regular sessions as well as for summer sessions. Separate academic records for undergraduate, professional, and graduate careers are maintained. The student academic record chronologically lists courses, units, grades, cumulative grade point average, transfer credits, and total units.

The transcript of a student’s UCR academic record is released only upon receipt of a signed request by the student authorizing the release. Application may be made in person at the Office of the Registrar, 1100 Hinderaker Hall, by mail, or by telephone requests cannot be honored. Students can order transcripts for regular or rush service. For regular service, a fee of $4 is charged for each official transcript. Application should be made two weeks in advance of the time the transcript is needed. Through rush service the transcript is available within 24 hours of receipt of the application; rush service requires a fee of $4 per transcript plus a $10 service fee. Express mail service is available for an additional $11.75. FAX service is available at $2 per page plus the aforementioned charges as appropriate. Payment is due in advance for all transcript service. A check or money order payable to UC Regents should be submitted with the application for transcript. 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.

Students may access their final grades at the end of each quarter by using PAWS or UCR STAR. Students should have their student identification number (Social Security Number in most cases) and their permanent personal identification number (PERMPIN) ready when using PAWS or UCR STAR to access grades.

Students may also obtain a grade report at no charge at the end of each term from the Office of the Registrar, 1100 Hinderaker Hall, by presenting their photo ID.

Students are strongly advised to check their academic records carefully and to bring any discrepancies to the attention of the Office of the Registrar immediately. Supporting enrollment documents are retained for no more than one year. After one year, it is assumed that students accept the accuracy of their academic records. Once a degree has been posted, changes to a student’s academic record are allowed only to correct an administrative error.

For information regarding regulations concerning disclosure of student records see appendix B.
Juan Carlos Ramirez gives a presentation in MGT 212, Management Synthesis.
CATALOG RIGHTS POLICY
FOR UNDERGRADUATE DEGREES

Students who enter UCR as freshmen will normally follow the catalog in effect in their first year of studies. Transfer students who have completed appropriate transfer programs have prior catalog rights. Check with the college dean's office for more information.

Academic Senate Regulation R6.12 states as follows: To be awarded the bachelor's degree, a student must either (a) meet graduation requirements in the UCR catalog in effect in the year of his/her graduation from the Riverside campus; or (b) fulfill graduation requirements in one UCR catalog applicable during any of the previous four years in which the student successfully completed at least one quarter or one semester of full-time college-level work, regardless of where matriculated. Upon applying for candidacy, the student must specify the applicable catalog.

CREDIT AND GRADES

UCR operates under the quarter system. For purposes of transfer credit, units earned under the semester system are converted to quarter units at the time of admission, with 1 semester unit equal to 1/2 quarter units.

Units are not charged and grade points are not assigned for courses graded "S" but it has no grade point equivalent and does not enter the GPA. Neither units nor grade points are assigned for courses graded "I". Units are not charged and grade points are not assigned for courses graded "I". No grade point value.

In Progress Grades

For certain courses extending over more than one term, where, by consent of the Academic Senate, evaluation of the student's performance may be deferred until the end of the final term, provisional grades of "IP" (in progress) shall be assigned in the intervening terms. Neither units nor grade points shall be assigned for "IP" grades. The provisional grades shall be replaced by the final grade if the student completes the course satisfactorily.
the full sequence. In the event that the full sequence is not completed, the grade "IP" will be replaced by the grade "I," and further changes in the student's record will be subject to regulations governing the grade "I."

Workload Credit

Workload credit is given for UCR classes preparatory to regular University work. Currently this includes MATH 003 and BSWT 001, BSWT 002A-BSWT 002B, BSWT 003 and BSWT 003D. Workload credit does not carry units for graduation but does count as part of a student's academic course load and enrollment status.

Repetition of Courses

Repetition of courses not authorized to be taken more than once for credit is subject to the following conditions: A student may repeat only those courses in which a grade of "D," "F," or "NC" was received (except in the case of BSWT 001, BSWT 002A-BSWT 002B, BSWT 003, BSWT 003D or ENGL 001A, ENGL 001B, ENGL 001C or ENGL 01SC in which a grade of "C-" may be repeated). Courses in which a grade of "D" or "F" has been earned may not be repeated on an S/N or NC basis. Repetition of a course more than once requires approval by the appropriate dean in all instances. Degree credit for a course will be given only once. When a course is repeated, only the most recently earned grade shall be computed in the GPA, up to a total of 16 units of repeated UC courses. In the case of further repetitions, the GPA shall be based on all grades assigned and the total units attempted.

Students should be aware that some professional and graduate schools will count the grades for all courses, including those repeated later, in calculating a student's GPA. The GPA used by such schools could differ significantly from that shown on a student's UCR transcript.

The Department of Veterans Affairs will not consider toward full time those units which are a repeat of courses in which a grade of "D-" has been received, unless a higher grade in the course is specifically required for graduation. Contact Student Special Services, (909) 787-4218 for additional details.

Change of Grade

All grades except "I" and "IP" become final when they are assigned. No term grade may be revised by reexamination. No change of grade may be made on the basis of reassessment of the quality of a student's work. An instructor may approve and report to the Registrar a correction of a recorded course grade at any time if clerical or procedural error has been made in assigning, transmitting, or recording the original grade.

Procedures for the Appeal of Grades

The Regulations of the Riverside Division of the Academic Senate state that if a student believes that nonacademic criteria have been used in determining a grade, the student shall attempt to resolve the grievance with the instructor of the course through written appeal to the instructor via the chair of the department. If the grievance is not resolved to the student's satisfaction at the departmental level, the student may file a complaint with the dean of the college or school having jurisdiction over the course or with the dean of the Graduate Division if the student is in graduate status. The complaint should be filed immediately after the alleged use of nonacademic criteria but not later than six weeks after the beginning of the subsequent quarter. Nonacademic criteria are criteria not directly reflective of class performance, such as discrimination on political grounds or for reasons of race, religion, sex, or ethnic origin or for other arbitrary or personal reasons.

Final Examinations

The instructor in charge of an undergraduate course shall be responsible for assigning the final grade in the course. The final grade shall reflect the student's achievement in the course and shall be based upon adequate evaluation of that achievement. The instructor's methods of evaluation must be clearly announced during the progress of the course. Evaluation methods must be of reasonable duration and difficulty, and must be in accord with applicable departmental policies. The methods may include a final written examination, a term paper, a final oral examination, a take-home examination, or other evaluation device. If a final written examination is given, it shall not exceed three hours in duration and shall be given only at the time and place announced in the Schedule of Classes. No student shall be excused from assigned final examinations.

Backdating Units

Undergraduate students who have no more than two courses or 8 units of course work remaining to be completed in their program for the bachelor's degree at UCR and who have been approved for admission to graduate status may begin the course work for an advanced degree at the beginning of their final quarter of undergraduate study. The student must inform the college office prior to enrollment in course work. When students are registered in graduate status, they then petition for credit for the courses completed beyond those required for a bachelor's degree. The petition must be signed by the dean of the school or college, attesting to the fact that the student's deficiency was as stated, and the petition is subject to approval by the department and the dean of the Graduate Division.

Credit by Examination

Credit by examination may be earned in accordance with regulations established by each college. The student should consult the Undergraduate Studies section of this catalog for specific regulations. A UCR student in residence may take examinations for degree credit in courses offered on the campus without formally enrolling in them. The results of the examinations are entered upon the student's record. There is a $5 service charge for each petition.

Undergraduate Credit for Graduate Courses

Students interested in obtaining undergraduate credit for graduate courses should contact the office of the dean of their college for further information.

Class Standing

Undergraduate classification is determined by the number of quarter units earned. Postbaccalaureate and graduate classifications are based on the student's academic objective and whether or not the student is advanced to candidacy for a doctorate.
Scholarship Regulations

Academic Standing
To remain in good academic standing a student must maintain a GPA of at least 2.00 and make progress toward the degree at a satisfactory rate.

Academic Probation
Students will be placed on academic probation if, at the end of any term, their GPA for the term is less than 2.00 but greater than 1.50, or their cumulative GPA, computed on the total of all courses undertaken in the University, is less than 2.00 ("C" average).

Academic Disqualification
Students are subject to disqualification from further registration in the University (a) if, at the end of any term, their GPA for that term is less than 1.50 or (b) if, after two terms on academic probation, their cumulative GPA, computed on the total of all courses undertaken in the University, is less than 2.00 ("C" average).

If, after one quarter on academic probation, the cause for probation has not been removed, Student Special Services is required to notify the Department of Veterans Affairs (DVA), and benefits may be terminated. Students who are allowed by the University to continue may file a request for resumption of benefits with Student Special Services.

Students who become subject to the provisions of this regulation will also be subject to such supervision as the faculty of their college may determine.

Undergraduate students who are disqualified are excluded from the University, and their connection with the University is presumed to be ended by such exclusion. Under certain circumstances, disqualified students may be readmitted upon their petition to the college and interview with the dean. Ordinarily, students will not be readmitted until after the lapse of a year and unless their deficiencies are reparable within a reasonable period of time. During the period of disqualification, a student must give evidence of conduct which indicates that improved academic performance can be expected upon readmission. If readmitted, students must remove their deficiencies through above-average work undertaken in the University. It is usually required that all deficiencies be removed during the first year after readmission.

In order to transfer from one campus of the University to another, or from one college to another on the same campus, students who have been disqualified or who are on probation must obtain the approval of the appropriate dean to whose jurisdiction transfer is sought. Upon completion of the transfer, the students are subject to such supervision as the faculty of their college may determine.

Graduate students must maintain an average of at least three grade points per unit in all upper-division and graduate courses taken for letter grade during residence at the University of California. Only courses in which the student is assigned grades “A,” “B,” or “C,” or equivalent, may be counted in satisfaction of the requirements for the master's degree. Graduate students who acquire scholarship deficiencies are subject to action by the dean of the Graduate Division.

Programs for Outstanding Students
Departments of the colleges offer and administer various courses and honors programs for specially prepared, outstanding students. In some departments, equivalent special studies and seminar programs have been designed for students with special aptitudes. Interested students should consult their faculty advisors early for details of the program in their major department.

Honors

Chancellor’s Honor List
Students who are placed on the dean’s honor list for all three quarters in a single academic year (fall, winter, and spring) will be placed on the Chancellor’s Honor List for that academic year.

Dean’s Honor List
Any student who in any quarter completes a minimum of 12 units with letter grades, with no grade in any course below a “B,” and who has a GPA of 3.50 or better for all work undertaken in the University for that quarter, will be placed on the Dean’s Honor List.

Graduation with Honors
The Academic Senate has established the following standards for award of honors at graduation: No more than the top 2 percent (by GPA) in the June graduating class shall receive highest honors. No more than the next 4 percent of graduating students shall receive high honors, and no more than the next 10 percent shall receive honors. To be eligible for honors at graduation, a student must have completed 60 or more quarter units of graded courses at the University of California. The GPAs used to determine class rank shall be based on courses taken at the University of California.

Students may obtain a statement of the specific requirements for graduation with honors from the office of the dean of their college.

University Honors Program
For a description of the University Honors Program, see Supplementary Education Programs in the front of this catalog. For a listing of requirements and courses, refer to University Honors Program in the Curricula and Courses section of this catalog.
Mike Atienza and Jamila Ford sing at the Student Composers Concert in Watkins Recital Hall. Paul Thé wrote the composition the two are singing.
The Associated Students (ASUCR) represents all campus undergraduate students. The governing body is a 20-member student senate with its membership elected by students from each of the three colleges: Engineering, 2 members; Natural and Agricultural Sciences, 6 members; and Humanities, Arts, and Social Sciences, 12 members. The Senate chooses from its own membership a president, a chairperson, a vice president of external affairs, and a vice president of campus internal affairs. Additionally, the senate fills five positions from the general student body: a vice president of finance, a personnel chair, an outreach director, an academic affairs director, and an elections chair. Together, these officers comprise the cabinet, which serves as the decision-making body when senate is not in session.

The president and vice president of campus internal affairs address on-campus issues, the vice president of external affairs interacts with the other UC campuses on state and national issues, and the vice president of finance manages the financial branch of student government.

ASUCR is supported by the ASUCR Fee, which is $15.50. The breakdown of the fee is as follows: $2.00 for funding clubs and organizations; $3.00 for KUCR, the on-campus radio station; and $10.50 for projects such as free legal aid, student-owned and operated businesses, and various campus publications.

ASUCR is a member of the University of California Student Association (UCSA) and of the United States Student Association (USSA). Both of these bodies address issues of higher education and financial aid in relation to students in general.

On campus, ASUCR, in conjunction with the personnel chair, appoints undergraduates in several important committees that play a role in campus governance, including the Commons Board of Governors, the Recreation Facility Board of Governors, the Registration Fee Advisory Committee, Student Conduct, and the Parking Committee.

In addition to serving the students in the form of advocacy, representation and participation in current issues, ASUCR operates two student-owned and operated businesses: Ditto Note Taking Service and The Exchange.

**Ditto** — next to the Bank of America ATM, (909) 787-3630 — is the on-campus note-taking service. It employs professional note takers in
several large lecture and general education courses and makes the notes available to students. Students may purchase quarterly subscriptions or weekly sets of class notes. The service also sells resume paper and provides self-serve photocopying, discounted 24-hour photo processing (both Kodak and Standard), and convenient mail services, including U.S. Mail, UPS, Airborne, and Fed Ex.

The Exchange — next to the East Food Court, (909) 787-2689 — offers discounted tickets to major theater chains in the area and to recreation venues including Disneyland, Magic Mountain, Knott’s Berry Farm, San Diego Zoo and Wild Animal Park, Sea World, and Universal Studios; and seasonal venues such as Bear Mountain and Mountain High ski resorts, Raging Waters, and the Renaissance Faire. The store sells balloon bouquets, cards, and UCR gift items, as well as class rings, graduation announcements, and diploma frames. It features the Greek Corner, where students can purchase gifts, create paddles, design custom letters, and special order jewelry.

GRADUATE STUDENT ASSOCIATION

222 Commons
(909) 787-3740; gsa.ucr@citrus.ucr.edu
http://www.gsa.ucr.edu/home/home.html

The Graduate Student Association (GSA) represents all of the campus graduate students, including credential and fourth-year biomedical students. It is a University unit governed by the Graduate Student Council which comprises representatives from each of UCR’s graduate programs. Officers, elected at large, are president (responsible for overseeing the operations of GSA and acts as liaison with the administration); executive vice president (responsible for representing GSA on and informing GSA regarding systemwide and statewide issues); health insurance chairperson (responsible for reviewing health care and insurance coverage); and public relations officer (in charge of public relations and publication of the monthly newsletter). GSA is supported by a separate $14 per quarter student fee which it administers and allocates annually for various graduate services. It also administers the minigrant program, to provide travel grants to graduate students who attend or present research at professional conferences. In addition, GSA has a fund for graduate students to use for hosting speakers or conferences at UCR.

GSA is a member of the University of California Student Association which represents all University of California students and has a separate lobby program in Sacramento. GSA is heavily involved in campus governance and appoints students to serve on various committees.

STUDENT LIFE AND LEADERSHIP CENTER

145 Costo Hall
(909) 787-7344; http://www.studentlife.ucr.edu

The Student Life and Leadership Center helps enhance the educational mission of the University through student leadership and development.

Special Events/Activities

Activities include Welcome Back Week, UCR Block Party, the Leadership Program, Activities Honor Society, Student Recognition and Awards, Scot’s Week, Music on the Patio, International Food Fair, Activities Fair, and Wednesday Nooners (weekly free concerts and activities on the Tower Mall).

UCR Varsity Band

The UCR Varsity Band is made up of student musicians and performs for men’s and women’s varsity home games. Students may also perform in the University Concert Band and Jazz Ensemble. (See listing under MUS 163, Concert Band, and MUS 164, Jazz Ensemble, in Music.)

Campus and Community Service Program

The Community Service Program, located in the Student Life and Leadership Center, consists of two main services which provide volunteers for the community and tutors for local schools. UCR students may gain valuable work experience, academic credit, and/or pay while in service to their community. The campus and community service program connects UCR students and student groups with nonprofit agencies in the community that need volunteers. The tutorial program offers assistance to K-12 students, both on an individual basis and in the classroom.

New Student Orientation Program — Bear Facts

Oriention Office
Student Life and Leadership Center
145 Costo Hall
(909) 787-2789; http://www.studentlife.ucr.edu

The new student orientation program, called Bear Facts, is designed to familiarize a new student with many aspects of campus life such as placement exams, class selection, enrollment information, registration, and issues like time management and adjusting to the quarter system. Freshman students and their parents can choose from six two-day summer programs or two one-day events.

Each quarter the Transfer and Reentry Services Center — H-101 Bannockburn Village, (909) 787-5307 — hosts a one-day session for incoming transfer and reentry students. Transfer and Reentry Orientation helps ensure a successful transition to the University. During orientation students meet with peer mentors and find out about student services and campus life.

Student Organizations

UCR has approximately 200 organizations established and maintained on the basis of student interest. These organizations include fraternities and sororities; and recreation, religious, academic, cultural, and ethnic clubs. The Student Life and Leadership Center encourages and advises student organizations as well as maintains a quarterly listing of all registered organizations. Mailboxes, banner supplies, poster approval, and program advising are available. The Activities Fair is sponsored each quarter to allow all organizations an opportunity to obtain new members.

ATHLETICS AND RECREATION

Intercollegiate Athletics

Director: Stan Morrison, M.S.
120 Physical Education Building
(909) 787-4292; http://www.ucr.edu/athletics

UCR is a Division I university of the National Collegiate Athletic Association (NCAA) and will participate in the Big West Conference in 15 sports, beginning Fall 2001. UCR has produced 5 national champion teams, 17 individual national champions, 175 All-Americans, and numerous conference and regional champions while participating at the Division I level prior to 2000. Additionally, 41 student-athletes have received Academic All-American status at the regional and national levels since 1985. Although not an NCAA affiliate, the UCR karate program is one of the finest in the nation, with seven team national championships to its credit.

UCR offers five teams for men interested in participating on the collegiate level: basketball, baseball, cross country, tennis, and track and field. Women’s sports offer six teams: basketball, cross country, softball, tennis, track and field, and volleyball. As part of the move to Division I, golf and soccer will be added for both men and women in the 2001-2002 academic year.
The student Recreation Center offers students, staff, and faculty the opportunity to exercise at their convenience. The 80,000-square-foot Center houses a large fitness center; three multipurpose rooms; racquetball, wallyball, and squash courts; a lower-level gym filled with three full-size basketball courts lined for volleyball and badminton; and an upper-level gym with one full-size basketball court also marked for volleyball and badminton. The fitness center includes a weight room and exercise equipment such as stationary bikes, treadmills, and stair climbers. The multipurpose rooms can be used for aerobics, martial arts, and dance classes. The sport courts are devoted to open, drop-in recreation except during intramural sports hours, when at least one court is always set aside for open recreation.

New this year are facilities outside of the center for basketball, volleyball, tennis, jogging, and rollerskating.

Intramurals and Recreation

The UCR Student Recreation Center offers intramural sports for men, women, and coed groups each quarter. This program sponsors as many as 20 sports and recreation clubs that focus on activities such as skiing, snowboarding, outdoor activities, cycling, soccer, rugby, lacrosse, and water polo. More than 35 noncredit leisure classes are offered each quarter at a low cost to students. Some of these classes include ballroom dancing, belly dancing, guitar, tennis, and windsurfing. Twice a year (fall and spring quarters) Market Day — an all-day sale of handcrafted items — is held on the Tower Mall.

The Leisure Line recreation newspaper is published once each quarter and contains times, dates, places and course descriptions of the classes, plus information about clubs, intramurals, and special activities.

The Student Recreation Center also offers camping equipment and windsurfer rentals.

The Recreation Outdoor Excursions Program offers rock climbing, camping, whitewater rafting, and other activities every quarter.

Student and Dependent Health Insurance

Graduate and Professional Students, and Nonresident Undergraduate Students. The UCR Graduate Student Insurance Plan (GSHIP) is mandatory for graduate and professional students, and nonresident undergraduate students. Such students are automatically enrolled in and billed for the insurance on their student account statement received each quarter. This plan supplements the outpatient care available to all registered students through the Campus Health Center. Certain academic appointees, such as Teaching Assistants, Graduate Student Researchers, Teaching Fellows, Readers, and Associates in ____, serving a minimum of 25 percent time or more per quarter, have their premiums paid by their funding source(s); fellowship recipients whose awards pay all assessed registration fees have their premiums paid by the fellowship. Details regarding remissions for graduate student academic appointees and fellowship holders may be obtained from the Graduate Division, University Office Building, (909) 787-4139, or the student’s graduate program.

Students who can demonstrate comparable insurance coverage from another source may apply to be exempted from the mandatory plan. Students may call (909) 787-5683 or fax (909) 787-4374 to inquire about deadlines to file a waiver petition or to have a waiver request form sent to them. Deadlines for waivers are published in the quarterly Schedule of Classes.

Resident Undergraduate Students and Dependents. In addition to outpatient services available to all registered students through the Campus Health Center, an optional health insurance plan for undergraduate students and dependents is available during the first 30 days of each quarter.
Information regarding policy benefits, brochures, lists of contracted providers, petitions for exemption from GSHIP, and optional dependent coverage is available through the Campus Student Health Insurance Office, Veitch Student Center, (909) 787-5683, fax (909) 787-4374, campushealth@ucr.edu.

CAREER SERVICES CENTER

Director: Deborah J. McCoy, M.A.
Veitch Student Center (Northwest wing)
(909) 787-3631

The Career Services Center (CSC) provides assistance to undergraduates and graduate students in career decision making, internship/cooperative education placement, graduate and professional school application, and the job search process. It is open year-round.

Students are encouraged to use the CSC throughout their years at UCR. For a modest fee, alumni may also take advantage of these services.

Career Planning

Career Library. The Center’s library contains general career information, reports of wage and labor trends, employment forecasts, job search materials, directories of employers, company literature, and current job openings.

Career Seminars and Workshops. Workshops are held throughout the year on topics that include career planning, skills/interests analysis, resume writing, interviewing techniques, and job search strategies. A quarterly series of career seminars offers students the opportunity to meet and talk with professionals from a variety of occupations.

Individual and Group Counseling. Counselors assist students in the process of determining career possibilities most suited to their interests, education, and talents.

Major Decision Program. Those who have not declared their academic major are encouraged to attend the Major Decision Seminar series. This series is designed to acquaint students with the variety of majors available at UCR. Several different disciplines are presented each quarter. It is also recommended that undeclared students take advantage of vocational testing and career counseling.

Vocational Testing. Combined with counseling and other career services, vocational tests can be valuable in making academic choices and identifying career options.

Alumni Career Network. More than 500 UCR alumni have volunteered to assist students in their career development by providing informational interviews and on-campus presentations. Notebooks containing the alumni network information are available for student use at the Center.

Underrepresented Students’ Career Development Program

The Career Services Center offers extensive programming to promote the professional development of underrepresented students. The services include skills-building workshops, field trips, and special career forums which bring employment representatives from business, industry, and government to campus. Underrepresented and disadvantaged students of all academic disciplines and levels are encouraged to partake in these activities.

Student Employment Office

Throughout the year hundreds of part-time, temporary, and summer jobs are posted in the Student Employment Office and at http://www.careers.ucr.edu. Summer job workshops and camp job fairs are held annually.

Placement Assistance

Current Job Openings. Job vacancies are posted at http://www.careers.ucr.edu and in the Career Library.

Interview Preparation. Practice interviews are offered with the use of video tape.

On-Campus Interviews. This program brings employment recruiters to campus to interview graduating students for professional positions. The 1999-2000 schedule attracted such diverse corporations as Automated Data Processing, Inc.; Anheuser-Busch Co., Inc.; Arthur Anderson, LLP; Deloitte & Touche; Ford Motor Co.; Gallo Wine Co.; GTE; Ingram Micro, Inc.; Logicom, Inc.; Merck & Co., Inc.; Nestle USA; New York Life Insurance Co.; PacificCare Health Systems; and TRW, Inc.

Resume Writing. Brochures give instruction on resume preparation. Workshops are offered and counselors provide resume critiquing by appointment or during daily “Drop-In Hours.”

Graduate/Professional School Application

Graduate/Professional School Catalog Collection. An extensive collection of graduate and professional school catalogs, directories, and program rankings is available in the Career Library.

Letters of Reference Files. Students can establish a confidential letters of reference file for graduate or professional school. The Career Services Center will send the file to the various schools and programs to which the student is applying.

Statement of Purpose. Brochures on how to write the statement of purpose are available. Counselors review statement drafts and provide feedback and suggestions.

MBA/Business Administration Career Services

MBA/Business Administration Career Services, a satellite office located in room 146 of The A. Gary Anderson Graduate School of Management, provides career guidance, job search assistance, and internship/cooperative education placement to graduate students in Management and to undergraduates in Business Administration. Contact (909) 787-7276.

Careers in Education

The Careers in Education program — in the Career Services Center — serves undergraduate and graduate students who are interested in a teaching career in public or private schools, colleges, or universities. The program offers career counseling as well as instruction and assistance in the academic job search.

Students may open a placement file of reference letters for academic positions or for admission to graduate or professional schools. The career library contains academic job listings from throughout the United States and overseas. UCR alumni, faculty, and staff may also use these services for a fee.

Salary and Employment Information

See appendix E: Salary and Employment Information for statistics on UCR graduates.

Academic Internship Program

Veitch Student Center (Northwest wing)
(909) 787-3631

Off-campus learning experiences are a significant academic option in many degree plans at UCR. More than 90 percent of UCR graduates engage in some career-related work experience before graduation. The
Academic Internship Program offers placement services to students seeking this type of experience and serves as the coordinating unit for such activities.

Internships may be part-time volunteer experiences or may offer a salary or stipend. Students can earn credit for an internship if an academic component is completed on campus. This requires a faculty sponsor from an appropriate department.

Internships are available on an ongoing basis or may be developed to meet the student’s particular career interest.

Juniors, seniors, and graduate students are eligible for placement.

Interns work in settings such as community services, government offices, banks, manufacturing firms, retail establishments, research labs, newspapers, radio and television stations, museums, hospitals, law offices, and other agencies. Recently, UCR interns have worked for such diverse employers as American Airlines; Argonne National Laboratory; Disney Consumer Products; Dodgers Inc.; Ernst & Young, LLP; GTE Hughes Research Laboratories; KNBC-TV; Lawrence Livermore Laboratory; Los Angeles Times; Merrill Lynch; Morgan Stanley Dean Witter; The Perrier Group; Price Waterhouse, LLP; Thomas Bros. Maps; and Wells Fargo Bank.

COUNSELING CENTER

Director: Catherine M. Steel, Ph.D.
Veitch Student Center
(909) 787-5533 E-mail: http://www.students.ucr.edu/counseling/cc.htm
Hours: Monday through Friday, 8 a.m. to 5 p.m.

The Counseling Center exists to help students acquire the personal skills, self-knowledge, and psychological resources that will enhance their university experience in terms of developing their full potential as students and as emotionally healthy people. The Center seeks to achieve these goals by counseling students individually or in groups; by contributing to the university environment through consultation, training, and outreach; and by studying the environment and recommending changes based upon research data and clinical judgement. In addition, national and state qualifying examinations are administered by the Counseling Center.

Services include the following:

**Individual or couple therapy** is available to students on a short-term basis. The goals of counseling include facilitating the student’s personal growth and self-esteem, development of satisfying relationships, effective communication, educational and career decision making, and the establishment of personal values.

**Group therapy** involves people meeting face-to-face with one or more trained group therapists and talking about what’s troubling them. Members also give feedback to each other by expressing their own feelings about what someone says or does. This interaction gives group members an opportunity to try out new ways of behaving and to learn more about the way they interact with others. Both general and specialized groups are offered.

**Psychological and career-interest tests** are used as part of the counseling process to facilitate self-understanding and decision making.

**Referrals** are made to appropriate resources on campus and in the community.

**Biofeedback training** is used, usually as an adjunct to personal counseling, for stress-related symptoms such as tension and migraine headaches, test anxiety, and sleep disorders.

**Workshops** address developmental issues and teach preventive mental health techniques (e.g., assertiveness training, overcoming procrastination, and stress management).

**Consultation and training** services include face-to-face meetings and telephone contacts with faculty, staff, or students to discuss concerns about students or student life.

**Outreach** presentations are primarily informational in nature, on topics such as how to help a distressed student and orientation to Center services.

**National and state qualifying examinations** are administered by the Center and include the GRE, MCAT, LSAT, PRAXIS, and MAT.

Services to registered students are free and confidential. Appointments can be scheduled by calling (909) 787-5531. If the need is urgent, a staff member is available for consultation immediately. After-hours emergency help can be obtained by calling UCR Police (909) 787-5222 or the Riverside Helpline (909) 686-4357.

**ETHNIC STUDENT PROGRAMS**

**African Student Programs**

Director: E.M. Abdulmumin, Ph.D.
217 University Commons
(909) 787-4576/4577 http://www.asp.ucr.edu

The African Student Programs (ASP) office coordinates and oversees student activities and programs that enhance cultural awareness and appreciation of ethnic diversities of the campus, the community, and the world. Students are encouraged to be active in campus programs as well as community service activities. The intent of these activities is to promote better understanding, cooperation, and mutual respect among the student body, faculty, staff, and community.

In addition to cultural enrichment, ASP’s objective is to promote academic excellence by providing a Retention Success Network and encouraging academic success. ASP also assists students in graduate school and career development decisions. Advisory and consultant services are provided to the clubs and organizations that are a part of ASP or UCR. Additionally, ASP seeks grant funding and research opportunities to enhance students’ academic and professional development.

The Pan African Theme Hall (PATH), located in the Aberdeen-Inverness Residence Hall, provides the opportunity for students to learn about African culture throughout the diaspora and how it relates to the world around us today. Programs include opportunities for educational, spiritual, mental, and social growth. ASP organizations and activities include New Student Orientation; Martin Luther King, Jr. Celebration; Malcolm X Celebration; African Scholars; African (Black/African American) History Month; The African Psychology Conference; Saturday Academy (for fourth through twelfth grades); Unity Day; BSU Leadership Conference; Annual Academic Awards Ceremony; African Student Alliance (ASA); student clubs and organizations; Greek Letter organizations; the summer National Youth Sports Program (NYSP); and NYSP Girls Sports Clinics.

**Asian Pacific Student Programs**

Director: Emilio J. Virata, Jr., B.A.
104 Costo Hall
(909) 787-7272/7274 http://www.students.ucr.edu/apsp

With the education of the whole person in mind, the Asian Pacific Student Programs (APSP) office strives to promote a diverse learning environment at the UCR campus, providing the community with opportunities to learn from and about Asian and Pacific Islander students. APSP supports Asian and Pacific Islander students as they pursue academic excellence, and as they contribute to the growth of the campus. APSP serves as an advocate for Asian and Pacific Islander concerns as the University develops into a model campus for the twenty-first century. APSP promotes an educational dialogue at UCR that respects and embraces the unique his-
tories and experiences of ethnic communities, and incorporates these values into the development of the cultural fabric of the institution.

The office provides opportunities for personal, group, and community development for the UCR campus. Through an integrated array of services, programs, events, and activities, APSP helps the campus maximize its educational potential as a diverse, multicultural community. Among these programs and services are peer mentoring, new student orientation; Asian and Pacific Islander Awareness Month; lecture, speaker, film and video series; leadership training; residence hall outreach; and youth and community outreach. APSP staff members also advise more than two dozen Asian and Pacific Islander organizations. Affiliations include fraternal, religious, sociocultural, political, media and preprofessional.

Underlying APSP’s programming efforts is the goal of developing in students the skills needed for active participation in a pluralistic, global community. These goals are based on the belief that higher education should strive to serve the needs of an everchanging world, the assumption that educational programs should reflect the characteristics of ethnic students, and the knowledge that minority communities have rich, diverse cultures that have values, languages, and behavioral styles that are functional for them and valuable for the community as a whole. Each program is designed to address a specific domain of development for UCR students and to promote an awareness of the relationships that exist between the diverse cultures.

**Chicano Student Programs**

**Director:** Alfredo Figueroa, B.A.

229 Costo Hall  
(909) 787-3821

**Hours:** Monday through Friday, 8 a.m. to 6 p.m.

The Chicano Student Programs Office is a special support program and coordinating center for projects and services responding to the needs of all Chicano/Latino students on campus. The Office is aimed at maximizing the students’ success potential while enrolled in the University.

Support services are provided in the areas of academic, cultural, and personal development. This includes advising and individual counseling, if needed, referral information, and the coordination of special programs and activities. Some activities and programs include Chicano Senior Dinner, Cinco de Mayo programming, Leadership Training, New Student/Parent Orientation, Speaker Series, Ballet Folklorico, Community Projects, and advisement of various clubs and organizations.

Moreover, Chicano Student Programs is dedicated to the students’ academic, cultural, and social excellence.

**Native American Student Programs**

**Director:** Earl D. Sisto, B.A.

224 Costo Hall  
(909) 787-4143

The Native American Student Programs Office provides educational, cultural, and social support for American Indian students. This office coordinates a variety of activities designed to expand educational awareness for American Indian students as well as the campus community. Such activities and projects include American Indian Academic Speaker Series, the annual Medicine Ways Conference and Pow Wow, “Indian Time” radio program on KUCR (88.3 or kucr.org:8000 on RealPlayer), and the Indian Times newspaper. In addition, the Native American Student Programs Office provides a linkage by referral to the wide array of student services and special programs available to UCR students. The Native American Student Programs Office and the Native American Student Association are dedicated to providing a supportive environment in which American Indian students may reach academic and personal goals while maintaining their cultural identity.

**Housing**

**Director:** Dale Bailey, M.B.A.

3595 Canyon Crest Drive  
Riverside, CA 92507

[http://www.housing.ucr.edu](http://www.housing.ucr.edu)

UCR student housing provides an environment which encourages academic pursuits and personal growth. Living on campus allows students to be part of the college community, with opportunities to participate in activities that complement their in-classroom educational experience.

**Residence Halls**

3595 Canyon Crest Drive  
Riverside, CA 92507

(909) 787-5972; [rehalls@housing.ucr.edu](mailto:rehalls@housing.ucr.edu)

UCR provides for about 2,400 students in double and triple rooms, 40 to 60 residents to a living unit. All halls on all floors are coeducational, and some feature a common academic or social interest which residents share. All rooms are furnished and air conditioned. Advantages of residential life include educational, social, cultural, and recreational programs; counseling and guidance services; prepared meals; a supportive study environment; wheelchair accessibility for disabled students and visitors; and job opportunities. Residents may choose from three convenient payment plans. Staff and residents work together to provide a multitude of activities and programs that develop a sense of community and provide social interaction. Educational support includes academic study groups, tutorial assistance programs, a computer lab, various seminars, study rooms, and scheduled study hours. Additional activities include weekly hall competitions, trips to the mountains and beaches, theme dances, special dinners, game shows, cultural events, and intramural teams.

Residents have a choice of various dining plans and dining facilities.

Meals offered are breakfast, lunch, and dinner, Monday through Friday, plus brunch and dinner on Saturday and Sunday. Meal hours are flexible to accommodate student schedules. A wide variety of food is featured daily. Three hot entrees are available at every meal, along with a salad buffet, deli bar, daily specials, assorted desserts, fresh fruit, and much more.

Residents can use recreational centers that feature TV lounges, pool and Ping-Pong tables, video game machines, fitness rooms, piano rooms, and social lounges. In addition, there are bike storage areas, vending machines, and laundry rooms. Small convenience stores/coffeehouses in the residence halls sell cappuccino, snacks, school supplies, toiletries, and more.

Students Carri Hanson (seated) and Itohan Airen in Lothian Residence Hall. Phase I of the new Pentland Hills will be occupied in Fall 2000, with construction to begin soon on Phase II.
Family Student Housing

Campus Apartments Leasing Office
3595 Canyon Crest Drive
Riverside, CA 92507
(909) 787-6370; campusapts@housing.ucr.edu

The Canyon Crest Family Student Housing complex is conveniently located within walking distance from the center of campus. There are 202 two-bedroom and 66 three-bedroom houses available to married and single-parent students. These remodeled units are moderately priced and unfurnished, except for stove and refrigerator. The University provides grounds maintenance, repair service, water, and trash removal. Students are responsible for the remainder of the utilities. Nestled in the center of the complex is a park with a recreation area, playground equipment, barbecue pits, and picnic facilities.

Bannockburn Village and Plaza, and Stonehaven Apartments

Campus Apartments Leasing Office
3595 Canyon Crest Drive
Riverside, CA 92507
(909) 787-6370; campusapts@housing.ucr.edu

The Bannockburn Village and Plaza, and Stonehaven Apartments complexes offer a wide variety of apartments and suites, as well as residential and commercial services. Apartment-style living is available to all transfer and continuing students. Apartments are either furnished or unfurnished and come equipped with refrigerators, ovens and stoves, carpeting, window blinds, heating, and air conditioning.

Residents enjoy access to swimming pools, a Jacuzzi, picnic areas and barbecues, a fitness room, recreational and study rooms, computer and typewriter labs, TV lounges, vending machines, bike storage, secure laundry rooms, and sport courts. Other services include equipment check-out, emergency assistance, and fax and copier availability. Campus Apartments residents can buy residence hall meal plans for added convenience.

Community Living

3595 Canyon Crest Drive
Riverside, CA 92507
(909) 787-6370; http://clifs.ucr.edu/ucr.htm

The Community Living Office assists students, faculty, and staff in obtaining suitable off-campus accommodations by providing detailed listings of apartments, rooms to rent, and people seeking to share housing. Numerous modern apartment complexes are located within a three-mile radius of the campus.

The University does not inspect off-campus accommodations and is not a party to negotiations between landlord and student. Students, faculty, and staff are encouraged to consider living arrangements early in order to secure accommodations near campus by the beginning of school.

INTERNATIONAL STUDENT SERVICES

Director: Diane Elton, B.A.
Watkins House
Canyon Crest Drive (next to the Bannockburn Complex)
Riverside, CA 92507
(909) 787-4113; http://www.ucr.edu/intlsvcs

The International Services Center (ISC) assists international students and scholars, offers support services to those interested in opportunities abroad, and features an international resource library. Intercultural programs, social events, and foreign speakers are presented. Protocol and visit arrangements are provided to the international guests of the campus.

Services to International Students and Scholars

The ISC provides assistance to UCR’s international students, scholars, and their dependents. Newly admitted, nonimmigrant students are required to participate in the orientation program which is held at the beginning of each quarter to help new students adjust to their new environment and the campus. In particular, students learn how to comply with government and University regulations related to their visa status. Throughout the year, workshops, excursions, and individual advising sessions are offered.

Special Scholarships for International Students

The University of California has reciprocal agreements with more than 120 institutions worldwide that provide competitive, one-year scholarships to study at any UC campus. Applications for this scholarship are obtained and processed at the foreign campus. Participating institutions are listed under the Education Abroad Program leading in the Curricula and Courses section of this catalog.

Advocacy for Permanent Residents

Permanent resident students (students born abroad but not U.S. citizens) are offered services specific to their needs, including enrichment events throughout the year to help them integrate their multicultural experiences.

Opportunities Abroad

UCR encourages students to include an international experience as part of a degree objective. Identification of the appropriate program option is important. The ISC has specific information on the Education Abroad Program, the Fulbright Student Program, direct enrollment options, and alternative opportunities. ISC advisors are available to discuss academic expectations, cultural adjustment, and reentry.

Education Abroad Program

The University of California’s Education Abroad Program (EAP) is often regarded as an example among exchange programs in colleges and universities nationwide. It is the largest and most varied program of its kind and has a distinguished reputation.

Students interested in the language, literature, science, art, culture, history, government, or social institutions of the EAP countries have the opportunity to gain substantially from first-hand academic experiences. Opportunities are available at each class level, with the traditional year abroad generally taken in the junior year. Short-term options are available in selected countries and in targeted academic fields.

The UC EAP operates in cooperation with more than 120 host institutions in 34 countries worldwide, and annually sends more than 2,000 students overseas. EAP site details are described in the Curricula and Courses section of this catalog under Education Abroad Program.

Interested students should begin to plan for this experience as freshmen, since there are advanced language requirements for some countries and the application process is completed two quarters to a year in advance of departure. Additionally, students are encouraged to enroll in courses offering global perspectives and background on the United States as good foundation for a year abroad.

Fulbright Student Program

The ISC coordinates the application process for enrolled UCR students who enter the national Fulbright Student Program competition. Graduating seniors and graduate students can find brochures, applications, and information on procedures at the Center. The application period is May to October for participation in the following year.
Direct Enrollment Options

As an alternative to EAP, the Center provides information, advising, and administrative services for hundreds of other study options. Such options include summer study, discipline-specific study, and additional country locations.

Undergraduate students must file a Planned University Leave Program (PULP) form to maintain their ability to reenter UCR upon return from abroad. For further information on PULP, refer to Withdrawals and Leaves of Absence in the Finances and Registration section of this catalog.

Alternative Opportunities

Nonstudy opportunities abroad are popular. The ISC maintains liaison with most of the networks offering internships, employment, and budget travel. Program selections, applications, and guidance are provided at the Center.

International Educational Exchange Library

The ISC houses a library of catalogs, books, maps, and videos regarding the various options for international study or work. Intercultural journals and reference materials are available for professional, academic, and career research. Comprehensive resources include information on financial aid, employment (voluntary or paid, temporary or career), domestic and foreign travel, and intercultural communication on cultures and countries.

THE LEARNING CENTER

Director: Susan Allen-Ortega, Ed.D.
Academic Support Facility (behind the Physical Education Building)
(909) 787-3721; http://www.learningcenter.ucr.edu

The Learning Center provides academic support to all enrolled undergraduates at UCR. Each quarter various noncredit, volunteer programs help students improve their study skills or basic skills. The following programs are available:

- Speed reading classes
- Chemistry — workshops and study groups
- Study skills adjuncts — to be announced in classes
- Mathematics — study groups and individual assistance is available to students in math classes or to those planning to take math classes
- English as a Second Language
- ACE program — assists students on academic probation
- Seminars to prepare for the GRE, LSAT, C BEST, MCAT, GMAT exams
- Tutorial assistance program — call (909) 787-5436 for more information

Support Services are designed to assist students during their UCR stay. The following programs are offered: professional counseling, peer counseling, GradTrack, and fall open house orientation.

STUDENT SPECIAL SERVICES

Services for Students with Disabilities

125 Costo Hall
(909) 787-4538 (voice and TTY); specserv@pop.ucr.edu
http://www.specialservices.ucr.edu

UCR has long made particular efforts to provide facilities and services to accommodate students with disabilities. To complement the campus physical facilities, Services for Students with Disabilities provides services designed to meet the individual needs of regularly enrolled students with permanent and temporary disabilities.

The Academic Support Center provides readers, note taking, interpreters, special test taking arrangements, and a variety of adaptive equipment including computers with speech, voice recognition and brailler. The Mobility Services Center provides wheelchair accessibility on campus and local transportation, as well as wheelchair repair and preventive maintenance and loans, and orientation to the access features of the campus.

The staff of the Services for Students with Disabilities office may serve as a liaison between students and various campus and community services, and provide referrals for scholarships and other sources of financial assistance, wheelchair accessible housing and transportation, and personal care assistants. Help is available with administrative matters for students sponsored by a state department of rehabilitation or other sponsoring agencies. Disability management counseling and referrals to campus and community agencies are available.

Prospective students are invited to discuss their needs with the office early in their planning to attend the University.

Veterans’ Educational Benefits

Student Special Services
(909) 787-3861 (voice and TTY); specserv@pop.ucr.edu
http://www.specialservices.ucr.edu

Student Special Services acts as the certifying official and liaison with the U.S. Department of Veterans Affairs (DVA) for students who are eligible for DVA educational benefits as a result of their own military service or the service-connected death or complete and permanent disability of a parent or spouse. Students who receive such educational benefits may also be eligible for special DVA-sponsored work-study and tutorial benefits.

Students wishing to receive DVA educational benefits are encouraged to contact Student Special Services as soon as they are admitted to UCR. The staff is also available to assist students with any problems relating to veterans’ educational benefits, such as nonreceipt of checks or forms.

Students should be aware of the standards for satisfactory progress at UCR; the pertinent information is detailed under Scholarship Regulations in the Academic Regulations section of this catalog. Also, it is the student’s responsibility to report to Student Special Services any change in status that may affect benefits.

Children and spouses of veterans whose death or disability (at any percentage) was service-connected may also be eligible for exemption from most University fees under provisions of the California Educational Code. Application may be made to any county veterans services office, and should be completed prior to enrollment. Retroactive claims for exemption of fees may be considered only if the claim is presented to the University during the fiscal year (July 1 through June 30) to which the claim applies.

Vocational Rehabilitation Services

State Department of Rehabilitation
3130 Chicago Avenue
Riverside, CA 92507
(909) 782-6650 (Voice) or (909) 682-0143 (TTY)

Students who have a disability that handicaps them vocationally may be eligible for services from a state department of rehabilitation office. These services may include vocational counseling and guidance, training (with payment of costs such as books, fees, and tuition), and job placement. Under certain circumstances students may also qualify for help with medical needs, living expenses, and transportation.

Appointments may be arranged through the above address.
Voter Registration

Voters who need to register for the first time, or reregister because they have moved or switched their party affiliation, can obtain forms on campus.

Voter registration forms must be completed, signed, and postmarked by October 10, 2000 in order to vote in the general election on November 7, 2000.

Voter registration forms can be obtained from the Student Special Services Office in 125 Costo Hall, the Associated Students (ASUCR) office in 213 Commons, and the Exchange student store in 416 Commons.

Voters may also request a form by calling 1-800-345-VOTE, or download a form from the Secretary of State’s web site at [http://www.ss.ca.gov](http://www.ss.ca.gov).

OTHER SERVICES FOR STUDENTS

Bookstore

Northeast of the University Commons  
(909) 787-4211; fax (909) 276-9105  
[http://www.bookstore.ucr.edu](http://www.bookstore.ucr.edu)  
Hours: Monday through Thursday, 8 a.m. to 5:30 p.m.  
Friday, 8 a.m. to 5 p.m.

At the UCR Bookstore, students can purchase all textbooks needed for their classes, as well as most necessary school supplies. The Bookstore also carries a large selection of general interest books on topics ranging from art to zoology, children’s books, reference books, and magazines.

In addition, the Bookstore sells gift items, backpacks, greeting cards, posters, art supplies, photographic supplies, office products, electronics accessories, and a large variety of UCR-imprinted sportswear, gifts, mugs, class rings, graduation caps and gowns, graduation announcements, and other associated merchandise.

CompUCR, located in the Bookstore, sells a variety of computer hardware platforms, printers, and supplies, along with a large selection of computer books and software.

A special order service is available for any book in print through the General Book Department. Special order services are available in each department of the Bookstore. Other services include phone cards, film processing, check cashing, computer-automated “books in print” information service, and faculty cap and gown rental.

During the first and last week of each quarter, students may sell used textbooks back to the Bookstore for up to 60 percent of their retail value. Students can also sell textbooks back at any time during the school year for wholesale value. Check with the Bookstore for more detailed information and specific requirements associated with book buy-back.

Students can cash checks for $10 over the amount of purchase with a valid UCR student ID or California driver’s license. Faculty and staff can cash checks to a maximum of $50 a day, no purchase required. To make use of this service, faculty and staff need to apply for a check-cashing card at the Bookstore.

Campus Media

Highlander

245 Costo Hall  
(909) 787-3617/3618; [http://www.highlander.ucr.edu](http://www.highlander.ucr.edu)

The Highlander is UCR’s student newspaper. In publication since 1955, the Highlander consistently provides quality reporting and insightful editorials on a variety of campus-related issues, as well as coverage of UCR cultural and sports events. The Highlander is published every Tuesday during the academic year, and is completely student-run and operated.

The paper is self-sufficient, receiving all of its funding solely from advertising. The Highlander provides all students and faculty with an opportunity to take part in the campus community, as well as an outlet through which their voice can be heard.

The Highlander staff is open to all students with a desire to write and a passion for journalism. Working on the Highlander is an excellent opportunity for students to gain hands-on experience in the myriad of skills necessary for a career in the communications field. It also gives writers a chance to cover important events and interview public figures.

The Highlander offers similar opportunities for business staff, photographers, and graphic artists.

KUCR (88.3 FM)

691 Linden Street  
(909) 787-3737; [http://www.kucr.org](http://www.kucr.org)  
Listen to KUCR with Winamp, Macamp or any mp3 player at kucr.org/8000

KUCR is the radio station of UCR. It is an educational, noncommercial, class-A station licensed to the University of California by the Federal Communications Commission (FCC). Managed and operated by the students, faculty, and staff of the UCR campus, KUCR embraces campus and public needs, involving student participation at all levels. It honors the university’s respect for diverse points of view, ethnic backgrounds, political beliefs, attitudes, and orientations by providing “alternative” programming not normally heard on mainstream commercial stations. This type of alternative service is the touchstone of quality educational broadcasting as originally conceived by the FCC and has characterized KUCR since its founding nearly 30 years ago.

Programming includes classical music, public-affairs commentaries, jazz, reggae, alternative rock, soul, blues, Latin, salsa, oldies, live events, interviews, news, and much else. The station presently has a range of 30 to 60 miles covering the community of Riverside and cities inland from Los Angeles, an area comprising more than a million people.

KUCR welcomes applications from all members of the campus for music, news, and public affairs programming. All applicants are interviewed, and those chosen are given hands-on training in production and broadcasting technology, after which they join the staff either as part of the news team, or as music programmers and hosts of their own shows, or as production engineers. All staff members at KUCR become familiar with radio equipment, broadcasting principles and practice, and communications in the broadest sense. They also meet like-minded students with a creative flair and a drive for self-expression. Whether an extracurricular activity or as training for a career in the media, work at KUCR is exciting, educational, and richly rewarding.

Child Development Center

Director: Judith W. Ood, B.A.  
3333 W. Atkins Drive  
Riverside, CA 92507  
(909) 787-3854; [http://clifs.ucr.edu/cdc/cdc.html](http://clifs.ucr.edu/cdc/cdc.html)

Child care services are available on campus for infants, toddlers, preschool, and kindergarten children (from four months through 5 years of age). Innovative learning and development programs are offered morning and afternoon, including a full-day kindergarten on a 12-month basis. The Center is open to children of students, faculty, and staff of UCR. Parents are encouraged to become involved in the early learning program. Internship and tutorial positions are available to UCR students. The Center is equipped with observation rooms to facilitate research opportunities. Classrooms have computers and developmentally based equipment and materials.
The University Commons is the center of student life on campus. The Commons Complex includes the Student Lounge; meeting rooms; student government offices; two ATMs; the UCR Bookstore; and the Exchange/Ditto, a student-owned store and note-taking service. Offices for most Student Services programs are in the complex and in neighboring Costo Hall.

At the Main Desk students can cash personal checks ($30 limit), send and receive faxes, and obtain change. Quiet games such as chess, Ping-Pong, and pool equipment are available for check-out. Other Main Lounge facilities include a Ping-Pong and pool room, video games, TV, and vending machines for snacks and stamps. The UCR Connection debit card may have cash value added at the Main Desk, and the card can be used for food and other items at several campus locations.

The Commons provides a pleasant and comfortable setting for students, faculty and staff. Entertainment and activities are regularly scheduled in the Lounge and on the patios.

Operations of the Commons are guided by the University Commons Board of Governors. Nine of the eleven members of this board are student representatives. Replacement cards are provided for a $15 fee.

### Food Services

The Commons offers students a variety of food choices in areas such as the Main Cafeteria, Tsunami's, Mama Mia's, Gerardo's Baja Grill, and the Campus Grille. Johnathan's Coffee Espresso Cart is a snack and beverage cart by Hinderaker Hall, and Court Yard Cafe, featuring Juice it Up, offers food and beverage items near the Science Library. Other venues for food in the Commons and elsewhere on campus include the following.

### Bear Necessities Convenience Store

in the heart of the Commons, has beverages, snacks, frozen yogurt, and "grab 'n go" items.

### Bear Grounds Coffee House

featuring Starbucks Coffee® and Krispy Kreme Donut®, is adjacent to the Bear Necessities Convenience Store and Terrace Rooms in Commons West Court. Specialty coffee, pastries, and donuts are available into the evening hours.

### Euro Deli

at the site of the former Johnathan's, offers sandwiches, soups, salads, and beverages.

### The Barn — Big West Bar & Grill

built in 1916, is one of the oldest buildings on campus and was originally a stable for campus horses. After the horses' departure, the building was remodeled to be the first campus cafeteria. Over the years the Barn has been used for dances, poetry readings, musical performances, and food and beverage service.

Open to students, faculty, and staff, the Barn currently provides food services and catering, and offers entertainment seating inside or on the patio courtyard. The University Club, a membership organization, is also located in the Barn.

### Connection ID Card

All students are required to carry and show a permanent photo ID card for identification, most official transactions, to check out books from the libraries, and for entrance into the Student Recreation Center. The UCR Connection card is also the meal and building access card for students living in the residence halls. The card may be used as a debit card for purchases or payments in all food service locations as well as at the Cashier's Office, Copy Center, Bookstore, vending machines, copiers, libraries, Commons Main Lounge, and laundry machines in the residence halls and campus apartments.

Cards may be obtained from the Office of the Commons, in the Commons Student Lounge. Photos will be taken from 9 a.m. to 4 p.m. Monday through Friday during the first two weeks of each quarter. The schedule for the remainder of the quarter is 9 a.m. to 3 p.m. Monday through Friday, or by appointment. UCR Connection cards are $15 for all students, faculty, and staff. Replacement cards are provided for a $15 fee.

### Cultural Events

The UCR Office of Cultural Events serves as a cultural, intellectual, and educational resource for the University and the surrounding community, exposing audiences to artists whose work has laid the foundation of the performing arts as well as those whose creative visions are shaping the arts for the next century.

### Performing Arts Series

In the past 30 seasons, the UCR Cultural Events program has presented more than 400 performances by some of the world's most distinguished talents. Artists who have performed in the series include the dance companies of Bella Lewitzky, Donald Byrd, Mark Morris, Garth Fagan, and Ballet Hispanico; classical musicians such as the Juilliard Quartet, Chanticleer, and the Tokyo String Quartet; jazz legends Dr. Billy Taylor and Wynton Marsalis; world music artists...
Pancho Sanchez and Tito Puente; and theatrical troupes including the National Theatre for the Deaf and the California Shakespeare Festival. The 2000-2001 Schedule of Events includes the following artists: Aeros, Anoushka Shankar, Big Bands behind Barbed Wire, 1999 Grammy winner Chanticleer, Diane Reeves, El Vez, the Eroica Trio, Fretwork, the Harlem Boys Choir, Juan Carlos Formel, Korean Monks, Les Tambours du Bronx, Mark Morris Dance Group, McCaleb Dance, the Regina Carter Quintet, the St. Petersburg String Quartet, Tim Miller, and WALELA, featuring Rita Coolidge.

UCR Master Classes. In addition to performing, visiting artists also conduct master classes for UCR students. In coordination with academic departments and student services programs, students have the opportunity to interact with professional choreographers, composers, actors, and musicians who are at the top of their field, thus enhancing their educational experiences.

Chalk the Walk. Chalk the Walk is a five-day arts festival event in which students use their artistic ability to create spectacular works of art in chalk on the Commons pavement. Cash prizes are awarded in two categories: Original Works and Copies of the Masters. 2000-2001 will mark the 12th annual “Chalk the Walk” event. This event is co-sponsored by ASCUR.

Music by the Tower Summer Concerts Series. The Music by the Tower Summer Concerts Series consists of festival concerts in July. Early Sunday evenings, families gather on the lawn surrounding the bell tower on the UCR campus. Activities such as face painting and hands-on art projects are available for children. The Concerts by the Tower Series attracts family audiences from all over the Inland Empire. In past seasons, more than 5,000 people have attended the summer series, making it one of the most successful free, family activities in the region.

Gender Education and Resource Services

Director: Adrienne Sims, Ed.D.
260 Costo Hall
(909) 787-3337; http://www.students.ucr.edu/wrc
Hours: Monday through Friday, 8 a.m. to 5 p.m.

Gender Education and Resource Services (GEARS) offers programs, projects, and services that focus on issues facing women and men today. During the year, the office presents workshops, speakers, films, and activities addressing women’s and men’s concerns. It also provides personal “drop-in” support through an extensive referral service and counseling. Students have the opportunity to develop special projects through the office, for which they can receive academic or internship credit. The library is available to everyone doing research on certain issues. Contact GEARS for specific information on the Escort Service, the library, the Sexual Harassment and Rape Prevention Education Program, empowerment groups, office-specific activities, the radio show (KUCR 88.3 FM or kucr.org:8000 on RealPlayer), and internships.

Lesbian, Gay, Bisexual, and Transgender Resource Center

Director: Nancy Jean Tubbs, M.S.
250 Costo Hall
(909) 787-2267; http://lgbtrc.ucr.edu

The Lesbian, Gay, Bisexual, and Transgender Resource Center (LGBTRC) provides support services for the lesbian, gay, bisexual, and transgender community at UCR, and educational programs for the entire campus community. Workshops, speakers, films, and activities are designed to expand the awareness and understanding of lesbian, gay, bisexual, and transgender issues. Programs and activities include Lesbian/Gay/Bisexual/Transgender Pride Week, National Coming Out Day, sensitivity training for the campus community, the Speak OUTreach speakers bureau, and support groups for students who are coming out. Peer outreach counselors also provide “drop-in” support for students, which includes advising, informal counseling, and resource referrals to the wide array of services and programs available on campus and within the community. In addition to these support services, the LGBTRC houses a collection of books, journals, magazines, and videotapes available to individuals conducting research on lesbian, gay, bisexual, and transgender issues. The Center is dedicated to providing a safe and supportive environment in which students may achieve their academic and personal goals. All students, regardless of sexual orientation, are encouraged to use the programs and services of the LGBTRC to explore issues important to, but not exclusive of, lesbian, gay, bisexual, and transgender people.

Ombudsperson

Andrea H. Briggs, M.A.
University Cottage
(909) 787-3213; abriggs@ucrcl.ucr.edu

The role of the Ombudsperson is to ensure that all members of the university community — students, faculty, administrators, and staff — receive equitable treatment within the university. Anyone who has a university-related problem, or is in conflict with someone on campus, or has been treated unfairly can seek the assistance of the Ombudsperson. The Office of the Ombudsperson provides an avenue for informal conflict resolution. The Ombudsperson explains what policies apply to a particular situation and develops strategies for dealing with the problem. The Ombudsperson also investigates complaints, facilitates communication between the parties in conflict, negotiates, mediates, and otherwise supports informal conflict resolution. The Ombudsperson can recommend changes in University regulations. Some topics that have been brought to the office’s attention include grading practices, graduation requirements, disputes about fees, and conflicts with supervisors and instructors. All records and communications are confidential. Complaints are pursued only with the consent of the complainant. The Office functions independently of the usual administrative structures.

Student Conduct and Policies

Information regarding student conduct, policies, grievances, and the complaint process can be found in appendix F: Campus Policies and Regulations Applying to Students.

Police Services

Chief of Police: Henry O. Rosenfeld, M.S.
3500 Canyon Crest Drive
Riverside, CA 92507
http://www.police.ucr.edu

The University of California Police Department (UCPD) operates 24 hours per day, 365 days a year. The Department’s 22 police officers have full police powers and are responsible for all law enforcement activities and criminal investigations on the UCR campus. Police officers work in uniform or plain clothes patrolling the campus in marked and unmarked vehicles, on bicycles, and by foot. Five University police officers, along with five officers from the Riverside Police Department, are assigned to the University Neighborhood Enhancement Team (UNET) and provide police services for the area surrounding the UCR campus.

Emergencies. The UCPD Communications Center is the Public Safety Answering Point for all 9-1-1 emergency calls originating on campus. The telephone reporting procedure for police, fire, and medical emergencies is as follows.

1. If there is a 9-1-1 instruction sticker on the phone, follow the directions on the sticker.

2. If no 9-1-1 instruction sticker is on the phone, follow the directions on the sticker.
2. On any campus phone requiring a 9 to be dialed for an off-campus line, dial 9-9-1-1
3. On any campus phone requiring an 8 to be dialed for an off-campus line, dial 8-9-1-1
4. On any campus pay phone, dial 9-1-1

Emergency call boxes are located in or near most parking lots around the campus. Use these call boxes to report directly to the Police Department communications center any emergency or suspicious activity. Nonemergency business calls to the Police Department should be placed by dialing (909) 787-5222.

**Reporting Crime.** All thefts, other criminal incidents, and suspicious activity occurring on campus should be immediately reported to the University Police Department by phoning, using emergency call boxes, or going to the police station. The police station is located at 3500 Canyon Crest Drive, adjacent to Parking Lot 24. Reporting crimes to the Police Department better enables the police to return stolen property and helps the police protect other members of the campus community from similar incidents. Reporting suspicious activity helps prevent crimes and apprehend offenders.

**Programs.** The Department’s programs stress crime prevention, security, and personal safety. Seminars are offered to instruct members of the campus community on how to protect themselves and their property better. Call (909) 787-5387 for crime prevention information.

**Lost and Found.** Found property should be turned in to the Police Department. Report lost property so the Department can watch for it. Office hours for lost and found are 9 a.m. to 3 p.m. Monday through Friday. Call (909) 787-5212 for information.

**Additional Information.** For more detailed information on the University Police Department, incident reporting, and campus security see appendix C. For campus crime statistics see appendix D or call the Department at (909) 787-5222.

**Transportation and Parking Services**

Director: Jan Martin, M.P.A.
683 Linden Street
Riverside, CA 92507
(909) 787-4395; [http://www.parking.ucr.edu](http://www.parking.ucr.edu)

Hours: Monday through Friday, 7:30 a.m. to 5 p.m.

All vehicles parking on the UCR campus must display a valid regular or visitor UCR parking permit from 7 a.m. to 10 p.m. daily. Parking permits may be obtained from Parking Services or the information kiosks near University Avenue and Martin Luther King Boulevard, open Monday through Friday from 7 a.m. to 8 p.m., and Saturday from 7 a.m. to 3 p.m. Parking Services arranges special parking for disabled people. For help with special parking problems or for additional information about parking, see the address above.

**The Highlander Hauler** is a free shuttle service for students, staff and faculty. Stops include the residence halls, Hinderaker Hall, the UCR/City Sports Center, University Extension, University Village, other campus locations, and Canyon Crest Towne Centre shopping center. The Hauler is equipped for wheelchair access. Schedules are available from the parking information kiosks, the Parking Services Office, and other campus locations.
GOALS OF AN UNDERGRADUATE EDUCATION

The faculty of UCR hereby declare the following set of general educational goals to be pursued through our individual and collective efforts in teaching and guiding the undergraduates of this campus.

A university education must help students realize their potential as individuals and contributing participants in society. This involves the acquisition of knowledge and skills and the preparation for future responsibilities.

A general education provides a framework enabling one to appreciate and critically examine the significant aspects of civilization. This framework is derived from the study of world history; political and economic systems; the ethnic, cultural, and religious diversity of the peoples of the earth; the arts and letters of all cultures; the social and natural sciences; and technology. Such a broad education is the foundation for concentrated studies that enable students to prepare for careers and to strive for an understanding of the world in which they live and about which they must make decisions.

A university education nurtures the critical skills of oral and written communication, including the exercise of these skills in a language other than one’s own. It must teach students to become verbally and quantitatively literate, to analyze and synthesize, and to regard the acquisition of knowledge as a lifetime activity. A university education must promote tolerance of the opinions of others and an understanding of the mutual dependence of human beings on each other and on their natural environment. The student’s university years also provide an opportunity to develop integrity, self-esteem, self-discipline, style, humanness, commitment to the general welfare, sensitivity to the interplay of environment and technology, and confidence that the human drama is worthy of a lengthy future.

UCR has three colleges that offer bachelor’s degrees: Humanities, Arts, and Social Sciences; Natural and Agricultural Sciences; and Engineering.

REQUIREMENTS FOR THE BACHELOR’S DEGREE

Requirements for the bachelor’s degree vary according to the college and major selected. There are three kinds of requirements: general university, college, and major.

1. General University requirements
   Subject A: English Composition
   American History and Institutions
   Unit
   Scholarship
   Residence

2. College breadth requirements
   English Composition
   Humanities
   Social Sciences
   Ethnicity
   Foreign Language
   Natural Sciences and Mathematics
   Additional Courses

3. Major requirements
   Lower-Division or Core Courses
   Upper-Division Courses

Students should plan a program of study carefully and consult an academic advisor. Students are responsible for meeting all requirements for graduation.

General University Requirements

General University requirements are Universitywide requirements which all undergraduates must satisfy. The following regulations and requirements are applicable to all undergraduate students on the Riverside campus.
**Subject A**

All university faculty assume that students are proficient in reading and writing English, and understand how to compose an essay on an academic topic. For this reason, students are asked to present proof of their writing ability (by the means shown below) on entering the University.

Completion of the Subject A requirement is a prerequisite to ENGL 001A. The Subject A requirement may be completed after enrollment in a course as directed by the Director of Basic Writing (see below). It may be completed before enrollment in any one of the following ways:

1. Receiving a score of 680 or above on the SAT II: Writing Subject Test of the College Board
2. Receiving a score of 3, 4, or 5 on the College Board Advanced Placement Test in English. (In addition to fulfilling the Subject A requirement, a score of 3 satisfies the ENGL 001A requirement; a score of 4 or 5 satisfies the ENGL 001A and the ENGL 001B requirements.)
3. Receiving a score of 5, 6, or 7 on the International Baccalaureate Higher Level Examination in English (Language A only).
4. Completion with a grade of "C" or better of a 4 quarter unit or 3 semester unit college-level course in English composition, taken at another institution before the student enters the University and judged acceptable by the Office of Admissions.
5. Receiving a passing grade on a Subject A test administered by the University of California system.

All freshmen from California high schools who have not met the Subject A requirement and who are entering in the fall quarter will be required to take a two-hour Universitywide Subject A Examination to be administered throughout the state. The examination is normally given the second Saturday in May.

In late April, California freshmen who have been admitted to at least one UC campus and who are not exempt from the Subject A requirement will be mailed notification of the test; a test ticket; a bill for $55; and a pamphlet giving an explanation of the testing procedures, the nearest test location, the time and date, and telephone numbers to call with questions.

Out-of-state students, those admitted after the test notification date, and students entering in winter and spring will take the examination on campus. Once students have taken the test, they will receive a payment card which they should mail to the Educational Testing Service. The card must be accompanied by a $55 check.

Any student who cannot meet the Subject A requirement before entrance must enroll in an approved Basic Writing course during Summer Sessions, or in BSWT 003 or a qualifier course such as ENGL 004A-ENGL 004B or ENGL 005 during the academic year. (Placement in academic-year courses is determined by the Director of Basic Writing.)

BSWT 001 and BSWT 003 do not carry baccalaureate credit, and must be passed with a grade of "C" or better to fulfill the requirement.

Students taking the qualifier courses must pass the Subject A exit examination at the end of the quarter in order to go on to ENGL 001A. Any student who has not satisfied the Subject A requirement after three quarters of University residence (three quarters of enrollment during the regular academic year) is not eligible to enroll for a fourth quarter at the University of California.

**American History and Institutions**

Candidates for a bachelor’s degree must satisfy the requirement in American History and Institutions by demonstrating a knowledge of American history and of American political institutions and ideals. The requirement may be satisfied by satisfactory completion of any one of the following:

1. One (1) high school unit in American History, or ½ high school unit in American History and ½ high school unit in civics or American Government.
2. The requirement in a junior college or other accredited institution.
3. One college course in the field of American History or one college course in the field of American Government. UCR courses that fulfill this requirement are HIST 017A or 017B, POSC 010, POSC 100, and POSC 113A.

Students applying for one of the teacher credential programs should check with the Graduate School of Education concerning limitations on ways of meeting this requirement.

Further information regarding the requirement and examination may be obtained from the Chair of the Committee on Preparatory Education.

**Unit Requirement**

A minimum of 180 units of academic work with a grade point average of 2.00 in all courses undertaken in the University of California is required for graduation.

Not more than 6 units of physical education activities courses, no 400 series course, and not more than three courses in the 300 series may be counted toward the 180 unit requirement.

**Scholarship Requirement**

To receive a bachelor’s degree, students must obtain twice as many grade points as units (2.00 grade point for all courses attempted in the University. An exception to this rule is made for those students undertaking certain honors courses.

**Residence Requirement**

The minimum residence at the University of California required for a degree is three quarters. One of the three quarters may be completed in a UCR summer session in which the student carries 12 units, unless a reduced load is approved in advance by the dean of the student’s college.

Courses completed in UC Extension are not considered work in residence, even if taken through concurrent enrollment.

Thirty-five (35) of the final 45 units must be earned in residence in the student’s college (this does not preclude the student from taking courses in other colleges on campus). For students who are enrolled in the Education Abroad Program, 35 of the final 90 units, including the final 12 units, must be earned in residence. Eighteen (18) of the 35 units may be completed in summer session courses on the Riverside campus.

With the approval of the dean of a student’s college or school, a candidate for the bachelor’s degree who was in active service in the armed forces of the United States in the year preceding the awarding of the degree may be recommended for the degree after only one quarter of University residence in which the candidate completes at least 16 units or passes a comprehensive examination in the major or field of concentration.

**College Breadth Requirements**

Each college has established additional requirements for a degree. The requirements of the colleges at Riverside are designed to stimulate an interest in areas of knowledge not necessarily related to a student’s major field. Students should note that they consist of a certain number of units and courses covering a variety of fields. Although these requirements determine a large and important part of the four-year curriculum, there are opportunities for students in all departments to do special, independent work.

The main objective of the colleges on the Riverside campus is to provide a setting within which students may develop those qualities of mind and character necessary to intellectual advancement and to useful member-
ship in society. The major areas of human knowledge form the substance of the colleges on the Riverside campus: the College of Engineering; the College of Humanities, Arts, and Social Sciences; and the College of Natural and Agricultural Sciences. The breadth requirements for the colleges are similar; however, please refer to each college’s section for a detailed discussion of its requirements.

Courses taken in a student’s major discipline (including courses cross-listed with the major discipline) may not be applied toward satisfaction of the Humanities, Social Sciences, Ethnicity, or the Natural Sciences and Mathematics requirements except for Biology majors in connection with the Biological Sciences requirement, English majors in connection with the English Composition requirement, History majors in connection with the World History requirement, Ethnic Studies majors in connection with the Ethnicity requirement, and Foreign Language majors in connection with language requirements. However, courses outside the major discipline, but required for the major, may be applied toward satisfaction of these requirements. Students are urged to make sure that they understand which courses are permitted to satisfy more than one requirement.

Information on specific degree requirements and courses is available in the departmental or Student Affairs offices in each college.

Placement exams may be required before taking courses in certain subjects, such as mathematics and foreign languages. The placement exam must be taken only once in each subject during a student’s UCR career. For foreign languages, a sufficiently high score on the placement exam can fulfill the Foreign Language requirement.

For details about the UC policy on intercampus reciprocity of breadth requirements and the UC policy on the Intersegmental General Education Transfer Curriculum, see below.

**UC Policy on Intercampus Reciprocity Regarding Breadth/General Education Requirements**

Students who transfer from one UC campus to another and who have completed the Breadth/General Education (B/GE) requirements of the campus from which they have transferred (except for upper-division B/GE requirements) will be considered to have met the B/GE requirements of the campus to which they transfer.

Courses taken for B/GE requirements at the campus from which they transfer will be accepted toward the appropriate B/GE requirements of the campus to which they transfer.

**UC Policy on the Intersegmental General Education Transfer Curriculum (IGETC)**

The Intersegmental General Education Transfer Curriculum (IGETC) is a series of courses offered in the California Community Colleges that transfer students may complete as a way to satisfy the lower-division breadth/general education requirements at the University of California or the California State University. The IGETC program is administered through the California community college system. Completion of the IGETC must be certified by a community college counselor and submitted to UCR with the student’s final transcript before the first term of enrollment. The IGETC is not an admissions requirement for transfer students.

At UCR, completion of the IGETC is a good choice for community college students planning majors in the College of Humanities, Arts, and Social Sciences (CHASS). Completion of a breadth pattern prior to transferring is good preparation for upper-division work for majors in this college. Transfer students planning majors in CHASS have the option of completing IGETC prior to transferring, or completing the CHASS breadth pattern.

The IGETC pattern is not accepted for transfer students planning majors in the College of Natural and Agricultural Sciences or the College of Engineering, as it does not adequately cover the extensive lower-division math and science preparation required for majors in these colleges. All courses taken towards completion of IGETC have been determined to be UC transferable and will be applied to the student’s degrees in these colleges as elective or UCR breadth credit, as determined by the department advisors in the College of Natural and Agricultural Sciences and the College of Engineering.

**Major Requirements**

A major is a coordinated group of upper-division courses giving depth to a student’s work in a chosen area. A list of degrees offered and possibilities for establishing individual majors are described in each college section below. Degrees are also listed in the front of the catalog. A student should choose a major not later than the beginning of the junior year. However, a choice of major before that time facilitates program planning in most academic fields.

The departmental major represents advanced and relatively specialized work in one of the academic disciplines in the college. The interdepartmental or nondepartmental major is broader in scope and usually based upon two or more disciplines. The individual major is designed for the student who has an unusual, but definite academic interest for which no suitable major is offered.

Major requirements are described in detail in the Curricula and Courses section of this catalog under the department or program offering the major.

The responsibility for fulfillment of all degree requirements — general university, college, and major — rests with the student. Students are urged, however, to seek program counseling with appropriate advisors. Assignment to a major or to the undeclared category (open to freshman and sophomore students) is based on the student’s choice indicated on the Application for Admission. The student should enroll in accordance with this choice; changes may be made following course enrollment.

**Change of Major**

Students may transfer from one major to another, elect a double major within their college, or add a second major in another college by filing a declaration with the dean of the colleges concerned.

**COLLEGE OF HUMANITIES, ARTS, AND SOCIAL SCIENCES**

Student Affairs
3400 Humanities and Social Sciences
University of California, Riverside
Riverside, CA 92521
(909) 787-3683; fax (909) 787-5836
[http://www.chass.ucr.edu](http://www.chass.ucr.edu)

The degree programs in the College of Humanities, Arts, and Social Sciences are designed to introduce students to both the breadth and depth of the University’s curriculum. This is accomplished by combining a wide distribution of courses with the opportunity to concentrate on course work in depth in a selected field. To achieve the first goal, students are required to take a wide range of lower-division courses that deal with the diversity of human knowledge. In the upper-division curriculum, students are relatively free to concentrate in depth in their major field of interest.

**Majors**

A major is a coordinated group of upper-division courses (courses numbered 100-199) in a field of specialization. The major may be a program
## College of Humanities, Arts, and Social Sciences

### Undergraduate Majors and Options

<table>
<thead>
<tr>
<th>Administrative Studies(^1)</th>
<th>B.A.</th>
<th>History (also majors with Administrative Studies, and Law and Society)</th>
<th>B.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American Studies</td>
<td>B.A.</td>
<td>Human Development</td>
<td>B.A.</td>
</tr>
<tr>
<td>Anthropology (also majors with Law and Society, B.A.; and Ethnic Studies, B.A.)</td>
<td>B.S.</td>
<td>Humanities, Arts, and Social Sciences (Interdisciplinary)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Art (Studio)</td>
<td>B.A.</td>
<td>Language</td>
<td>B.A.</td>
</tr>
<tr>
<td>Art History (also majors with Religious Studies and Administrative Studies)</td>
<td>B.A.</td>
<td>Latin American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Asian American Studies</td>
<td>B.A.</td>
<td>Liberal Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Asian American Studies</td>
<td>B.A.</td>
<td>Linguistics</td>
<td>B.A.</td>
</tr>
<tr>
<td>Business Administration</td>
<td>B.A.</td>
<td>Music</td>
<td>B.A.</td>
</tr>
<tr>
<td>Business Economics</td>
<td>B.A.</td>
<td>Native American Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Chicano Studies</td>
<td>B.A.</td>
<td>Philosophy (also major with Law and Society)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Chinese</td>
<td>B.A.</td>
<td>Political Science (also majors with Administrative Studies, International Affairs, and Law and Society)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Classical Studies</td>
<td>B.A.</td>
<td>Psychology</td>
<td>B.A.</td>
</tr>
<tr>
<td>Comparative Ancient Civilizations</td>
<td>B.A.</td>
<td>Public Service–Political Science</td>
<td>B.A.</td>
</tr>
<tr>
<td>Comparative Literature</td>
<td>B.A.</td>
<td>Religious Studies (also major with Art History)</td>
<td>B.A.</td>
</tr>
<tr>
<td>Creative Writing</td>
<td>B.A.</td>
<td>Russian Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Dance</td>
<td>B.A.</td>
<td>Sociology</td>
<td>B.A.</td>
</tr>
<tr>
<td>Economics (also majors with Administrative Studies, B.A.; and Law and Society, B.A.)</td>
<td>B.A.</td>
<td>Sociology (also majors with Administrative Studies, B.A., B.S.; and Ethnic Studies, B.A.(^3))</td>
<td>B.A.</td>
</tr>
<tr>
<td>English</td>
<td>B.A.</td>
<td>Social Relations</td>
<td>B.A.</td>
</tr>
<tr>
<td>Ethnic Studies (also majors with Anthropology(^2) and Sociology(^3))</td>
<td>B.A.</td>
<td>Asian Studies</td>
<td>B.A.</td>
</tr>
<tr>
<td>Film and Visual Culture</td>
<td>B.A.</td>
<td>Spanish</td>
<td>B.A.</td>
</tr>
<tr>
<td>French</td>
<td>B.A.</td>
<td>Theatre</td>
<td>B.A.</td>
</tr>
<tr>
<td>German</td>
<td>B.A.</td>
<td>W omen's Studies</td>
<td>B.A.</td>
</tr>
</tbody>
</table>

\(^1\) Administrative Studies is only offered as a major combined with other programs.

\(^2\) This degree is discontinued. Students working toward this degree (as well as readmitted students and transfer students accepted prior to Fall 1999) are allowed to complete the degree requirements but are required to graduate by June 2001.

\(^3\) These degrees are discontinued. Students working toward these degrees (as well as readmitted students and transfer students accepted prior to Fall 2000) are allowed to complete the requirements but are required to graduate by June 2002.

### Disciplinary Minors

- African American Studies\(^4\)
- Anthropology
- Art History
- Art History
- Asian American Studies\(^4\)
- Chicano Studies\(^4\)
- Chinese
- Classical Studies
- Creative Writing
- Dance
- Economics
- English
- Ethnic Studies
- French
- German

### Interdisciplinary Minors

- Asian Studies
- Chicano Bilingual-Bicultural Studies
- Film and Visual Culture
- International Relations
- Italian Studies
- Journalism\(^5\)
- Latin American Studies
- Lesbian, Gay, and Bisexual Studies
- Marxist Studies
- Urban Studies
- W estern American Studies

The disciplinary minor requirements and the interdisciplinary minor requirements of Asian Studies and Latin American Studies are described in the Curricula and Courses section under the appropriate department or program. For a description of the other interdisciplinary minors, see individual listings in the Curricula and Courses section.

\(^4\) See Ethnic Studies for descriptions of these minors.

\(^5\) The Minor in Journalism program is not currently accepting new students. Please contact the Creative Writing Department for current information on the status of the program.
of upper-division courses within a single department (departmental major) or a group of related courses involving a number of departments (interdisciplinary major) or, under certain circumstances, a group of courses chosen to meet a special interest (Humanities, Arts, and Social Sciences individual major).

Before enrolling in certain upper-division courses, students may be required to gain appropriate knowledge by completing specific prerequisite courses. With the assistance of a departmental advisor, students are expected to select lower-division courses which prepare them for the advanced studies they propose to follow.

Choosing a Major, Undeclared Majors

While freshmen may choose an academic major on entering UCR, those who are unsure about specific academic goals may request to be admitted to the college as an "undeclared major." These students often take introductory courses in the natural sciences, social sciences, humanities, and fine arts while searching for an area that most excites their interest. Each quarter, undeclared majors are required to meet with an advisor in the Student Affairs Office about their selection of courses.

Students with 90 or more units toward a degree are expected to declare a major. Those who enter UCR after two years of work elsewhere may be in undeclared major status for one quarter. To declare a major, students must obtain an approval from the Student Affairs Office by filing a Petition for Declaration of Major. Students are expected to select a major by the beginning of their junior year (completion of 90 units).

If undeclared majors feel that their interests lie primarily in the areas of the natural sciences, mathematics, and statistics, or the agricultural sciences, advising can be obtained in the College of Natural and Agricultural Sciences, (909) 787-7294. Those interested in engineering or computer science can be advised in the College of Engineering (909) 787-5651.

Double Majors

Students who have declared a second major within the College of Humanities, Arts, and Social Sciences or a second major in a department or program of another college. Changes are not permitted while on academic probation or during the final senior year (135 units or more). Both majors must be completed within the maximum limit of 216 units and approval must be obtained from advisors in both departments or programs. In such cases, all course requirements must be completed for each of the two majors chosen. If the majors are not in the same college, one of the two majors must be designated as the principal major for the purpose of satisfying breadth or general education requirements. No more than 8 upper-division units may count for both majors simultaneously.

A declaration of two majors in different colleges must be signed by the deans of the colleges concerned and filed by the student with the college of the principal major. If the two majors lead to different degrees (B.S. and B.A.), that fact will be noted on the transcript, but only one diploma indicating both degree designations will be issued upon completion of such a program. Furthermore, if the double major is a mixed B.S./B.A., the college requirements for both majors must be met.

Students wishing to declare a second major must present an outline to the Student Affairs Office, indicating which courses are to be counted toward the requirements for each major before a petition is accepted for the addition of a major.

Interdisciplinary, Individual Majors

Through the Humanities, Arts, and Social Sciences Interdisciplinary Program, courses of broad interest are offered, and students with interests not readily satisfied through existing departments and programs may develop individual majors under the direction of special faculty sponsors. Students interested in a program combining two concentrations into a single major may also wish to consider the Liberal Studies Program. Several of the College’s regular major programs have an interdisciplinary emphasis that allows examination of a particular problem, theme, or area from a variety of perspectives.

Students with unusual but definite academic interest for which no suitable major is offered at the University can plan an individual major under the direction of a faculty advisor. The consent of the Humanities, Arts, and Social Sciences Interdisciplinary Program Committee and the associate dean are required.

The title of the major will be entered on the official degree list and on the official transcript. Diplomas will read “Humanities, Arts, and Social Sciences Interdisciplinary” with the individual field of concentration specified.

Internships, Independent Projects and Student Research

The Humanities, Arts, and Social Sciences student can often practice the subject, as well as read about it. Many undergraduates have the opportunity to work with a faculty member on a research project, and many departments offer field work and internship courses. In these courses, students combine several hours per week of experience in an agency or firm with study of related academic materials and participation in a seminar, where formal knowledge and practical experience are related to one another. Internship experiences are regularly available in settings such as public and business administration, politics, environmental protection, social welfare, criminal justice, clinical and other psychology programs, museums and archival installations, newspapers, and art galleries.

Normally, each local internship will not count for more than 4 or 5 units in a single term, larger numbers of units being reserved for quarter-away internships. Petitions for credit beyond 5 units in a single quarter for a local internship must have the sponsoring agency’s approval and a written justification by the student’s faculty sponsor. All such requests require the associate dean’s approval.

A maximum of 16 units of credit toward the bachelor’s degree may be obtained through internship courses, with a maximum of 12 units of internship scheduled in a single quarter for quarter-away situations. Students who are on academic probation may not enroll in internship courses.

Transfer of Majors, Changing Majors

Students in good academic standing can petition to transfer from another college to the College of Humanities, Arts, and Social Sciences or from one major to another within the College, provided they complete the new major within the 216 unit limit. The petition must be approved by the Student Affairs Office before the change can be processed by the Office of the Registrar. Changes are not permitted while on probation or during the final senior year (135 units or more).

Students who fail to attain a grade point average of 2.00 (”C”) in preparation for the major or courses required for the major may be denied the privilege of entering or continuing in that major.

Minors

The College offers minor programs; however, no student is required to take a minor. Minors are not degree-granting majors; they are sequences of supplemental courses designed to enhance work in certain areas. Any minor may be taken jointly with any departmental or interdisciplinary major. Minors in the College shall consist of not fewer than 16 nor more than 28 units of organized upper-division course work. In disciplinary minors, at least 16 of these units shall be selected from among courses selected for the major. No overlap may occur among courses used to satisfy upper-division course requirements for a major and a minor. A GPA of at least 2.0 is required in upper-division courses in the field of the minor.
University Honors Program

For a description of the University Honors Program, see Supplementary Education Programs in the front of this catalog. For a listing of requirements and courses, refer to University Honors Program in the Curricula and Courses section.

Undergraduate Program in Business Administration

The A. Gary Anderson Graduate School of Management (AGSM) and the College of Humanities, Arts, and Social Sciences jointly offer an upper-division major in Business Administration intended for students who seek a professional education in the functional fields of private sector management. Students who elect the pre-major are advised in the College of Humanities, Arts, and Social Sciences during their freshman and sophomore years and after admission to the major, are advised by the AGSM. In addition to administering the program, the AGSM also teaches courses in the functional areas of management such as finance, accounting, marketing, and management information systems. The B.S. degree in Business Administration is awarded by the College of Humanities, Arts, and Social Sciences.

Degree Requirements

Students must meet three levels of requirements for the Bachelor of Arts or Bachelor of Science degree: General University requirements, College requirements, and major requirements.

General University Requirements

General University requirements are listed at the beginning of the Undergraduate Studies section. In addition, the College of Humanities, Arts, and Social Sciences has the following requirements and limitations.

Unit Requirements

Students must satisfactorily complete for credit a minimum of 180 units for the bachelor’s degree. A maximum of 216 units is allowed. After having credit for 216 units, students are not permitted to continue except in cases approved by the associate dean in which specific academic or professional reasons are involved.

Credit Limitations

Transfer students with credit from other institutions (advanced standing credit), receive a Transfer Profile from the Office of Undergraduate Admissions. The Student Affairs Office evaluates the course work, indicating how the transferable credits are applied toward the degree. However, the following credit limitations may reduce the total number of units which apply toward the degree in the College of Humanities, Arts, and Social Sciences. Students should meet with an academic advisor in their major for questions regarding transfer credits.

The following credit limitations apply for all students enrolled in the College:

1. After completing 105 quarter units at a community college, students are not allowed further units for courses completed at a community college.

2. No more than 6 units in physical education activity courses (PED 001) may be applied toward the 180-unit requirement for the bachelor’s degree.

3. No 400 series courses and not more than three courses in the 300 series of courses may be counted toward the 180 unit requirement for the bachelor’s degree.

4. No more than 5 units of credit may be taken per quarter in special studies courses. See specific restrictions under each departmental listing regarding credit toward the major in special studies courses.

College Breadth Requirements

The Student Affairs Office, in consultation with the Executive Committee of the College of Humanities, Arts, and Social Sciences, determines which courses apply to the following requirements. It is the student’s responsibility to verify those courses which fulfill these subject requirements.

Courses taken in the department or program of a student’s major (including courses cross-listed with the major) may not be applied toward the breadth requirements except for History majors in connection with the World History requirement, English majors in connection with the English Composition requirement, Ethnic Studies majors in connection with the Ethnicity requirement, and foreign language majors in connection with the Foreign Language requirement. However, courses outside the major discipline, but required for the major, may be applied toward satisfaction of these requirements.

Students who elect a double or interdisciplinary major may apply courses in one of the majors or departments toward satisfaction of the breadth requirements.

For the following requirements, a course is defined as a block of instruction which carries credit of 4 or more units.

No course may be applied to more than one breadth requirement, with the exception of the course taken to meet the Ethnicity requirement. Internship and independent studies courses may not be used to satisfy breadth requirements.

Courses cross-listed with Business Administration, Education, and Physical Education may not be used to satisfy breadth requirements.

English Composition

Students must demonstrate adequate proficiency in English Composition by completing a one-year sequence of college level instruction in English Composition with an average grade of “C” or better and no grade lower than “C-.”

Students with an overall grade point average under “C” in the ENGL 001A, ENGL 001B, ENGL 001C sequence will be required to repeat composition courses as necessary in order to meet the required “C” average minimum. It may be necessary to repeat one or more of ENGL 001A, ENGL 001B, ENGL 001C courses in which a grade of “C-” was earned in order to fulfill the three-quarter English composition average of “C” or better. However, courses with a grade of “C-” cannot be repeated for credit to alter the transcript grade point average.

Students should enroll in an English composition course each quarter they are registered at UCR until the sequence of preliminary Basic Writing courses, if needed, and ENGL 001A, ENGL 001B, ENGL 001C is completed with satisfactory grade point average. A student may not receive baccalaureate credit for any work in English composition taken prior to completing the Subject A requirement.

Transfer students who have credit for one semester of English Composition from another institution are required to take two additional quarters, i.e., ENGL 001B and ENGL 001C.

Students are required to take the College Board Advanced Placement Test in English to satisfy ENGL 001A; they must complete ENGL 001B and ENGL 001C.

Students with a score of 4 or 5 on the College Board Advanced Placement Test in English have satisfied ENGL 001A and ENGL 001B; they must complete ENGL 001C.

Students who have achieved a passing score on both parts of the California State University and College English Equivalency Examination taken prior to July 1, 1993 have satisfied ENGL 001A and ENGL 001B; they must complete ENGL 001C.
Humanities: 20 units

For the B.A. degree
1. One course in world history (At UCR, courses that satisfy this requirement are HIST 010 or HIST 015 or HIST 020.)
2. One course in the Fine Arts (Art, Art History, Dance, Film and Visual Culture, Music, Theatre, or Creative Writing courses in poetry, fiction, or playwriting)
3. Two courses from among
   a) Literature (offered by the departments of English, Comparative Literature and Foreign Languages, Hispanic Studies)
   b) Philosophy
   c) Religious Studies
4. One additional course from
   a) History, the Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 3 or higher (Courses used in fulfillment of the foreign language requirement may not be used to meet this requirement.)
   c) A humanities course offered by the following departments or programs
      Ethnic Studies
      Creative Writing (courses in journalism)
      Humanities, Arts, and Social Sciences Interdisciplinary
      Latin American Studies
      Linguistics
      Women’s Studies

For the B.S. degree
1. One course in world history (At UCR, courses that satisfy this requirement are HIST 010, HIST 015, or HIST 020.)
2. One course from
   a) Fine Arts (Art, Art History, Dance, Film and Visual Culture, Music, Theatre, Creative Writing courses in poetry, fiction, or playwriting)
   b) Literature (taken in the departments of English, Comparative Literature and Foreign Languages, or Hispanic Studies)
   c) Philosophy
   d) Religious Studies
3. Three additional courses from
   a) History, the Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 3 or above
   c) Humanities courses offered by Ethnic Studies; Creative Writing (courses in journalism); Humanities, Arts, and Social Sciences Interdisciplinary; Latin American Studies; Linguistics; or Women’s Studies

Social Sciences: 16 units
1. One course in Economics or Political Science
2. One course in Anthropology, Psychology, or Sociology
3. Two additional courses from Ethnic Studies; Environmental Sciences; Geography (cultural geography courses); Human Development; Humanities, Arts, and Social Sciences Interdisciplinary; Women’s Studies; or one of the disciplines in (1) or (2) above

Ethnicity: 4 units
One course focusing on the general concepts and issues in the study of race and ethnicity in California and the United States. Courses that satisfy this requirement must concentrate on one or more of four principal minority groups (African American, Asian American, Chicano/Latino, and Native American). These courses must be comparative in nature, analyzing the minority group experience within the present and historical context of other racial and ethnic groups, such as European-American minorities. The courses are to be offered by or cross-listed with the Department of Ethnic Studies.

Regardless of the student’s college and major, the course may be counted toward the Humanities or the Social Sciences graduation requirements, depending upon the course’s content as evaluated by the Committee on Educational Policy. Refer to the Courses and Curricula section for the courses that fulfill the Ethnicity requirement.

Foreign Language
For the B.A. degree: course level 4 or equivalent
This requirement may be satisfied by students (except for foreign language majors who satisfy the spirit of the language requirement by majoring in one or more languages) by completing the fourth-quarter level or its equivalent in one language at UCR (or at another college or university) with a minimum grade of “C” or by demonstrating proficiency at the fourth-quarter level on a foreign language placement exam offered by one of the foreign language departments at UCR. This test does not yield unit credit; it only determines whether the Foreign Language requirement has been met, or in which course of the language sequence a student should enroll. The placement exam may be taken only once in each subject during a student’s UCR career.
Courses in American Sign Language may be used to meet this requirement.

For the B.S. degree: course level 3 or equivalent
This requirement may be satisfied by students (except for foreign language majors who satisfy the spirit of the language requirement by majoring in one or more languages) by completing the third-quarter level or its equivalent in one language at UCR (or at another college or university) with a minimum grade of “C” or by demonstrating proficiency at the third-quarter level on a foreign language placement exam offered by one of the foreign language departments at UCR. This test does not yield unit credit; it only determines whether the Foreign Language requirement has been met, or in which course of the language sequence a student should enroll. The placement exam may be taken only once in each subject during a student’s UCR career.
Courses in American Sign Language may be used to meet this requirement.

Natural Sciences and Mathematics: 20 units
1. One course in Mathematics, Statistics, or Computer Science.
2. One course in Biological Sciences (Biochemistry, Biology, Botany and Plant Sciences, Entomology, Nematology, or Plant Pathology).
3. One course in Physical Sciences (Chemistry, Physics, Earth Sciences, excluding cultural Geography courses).
4. Two additional courses from the areas listed above or in physical and/or biological science courses offered in the Department of Environmental Sciences.
**College Regulations**

General information regarding College policies and procedures is given in the Student’s Guide to the College of Humanities, Arts, and Social Sciences, available in the Student Affairs Office.

**Student Responsibility**

Students are responsible for meeting deadlines dates regarding enrollment, add/drop, change of grading basis, credit by examination, withdrawal, declaration of candidacy, and so forth. The dates are in the Schedule of Classes and must be observed. Counseling can be obtained in the student’s major department or in the college’s Student Affairs Office, 3400 Humanities and Social Sciences Building.

**Academic Counseling**

It is the student’s responsibility to meet all graduation requirements: general university, college, and major.

Major advisors are available within each department or program. All departments assign an academic counselor to each major and require an advisor’s approval before enrolling, submitting an academic petition, or making a change in the class schedule. Entering students who have not yet selected a major field of study should contact the Student Affairs Office.

College counseling services are located in the Student Affairs Office. A staff of academic counselors is readily available to assist with questions pertaining to academic regulations and procedures, selection of courses which satisfy breadth requirements, major options, and alternatives.

Many questions may be answered at the receptionist’s desk or by phoning the Student Affairs Office at (909) 787-3683. Students who need to confer with a counselor about overall degree requirements, academic difficulty, program planning, or assistance in selecting a major may come in and make an appointment with a counselor.

**Course Enrollment**

Students are required to register and enroll by the date set by the campus (see the Schedule of Classes for details).

The recommended study load for undergraduate students is 12 to 16 units (three to four courses) per quarter. A three- to four-course load (12 to 14 units) is recommended for students in the first quarter of the freshman year. The minimal program for an undergraduate student to be considered full time is three courses (12 units) per quarter. The normal progress for an undergraduate student is four courses (16 units) per quarter.

A class schedule of fewer than 12 units must be approved by the associate dean. (See the Schedule of Classes for details regarding fee reductions.) Students on academic probation may not enroll for more than 14 units or fewer than 12 units without approval of the associate dean. Students on probation may not take courses on an S/NC basis, regardless of the grading basis of the course, without approval of the associate dean.

After a class schedule is selected, students may request changes by petition during a specified period. Such petitions must be approved by the faculty advisor and also, in the case of adds or drops, by the instructor concerned. Withdrawal from any course or a change in the class schedule outside the regular period requires the approval of the associate dean.

Courses (including Special Studies courses) cannot be added after the third week of instruction; courses cannot be dropped after the fifth week of instruction. The grading basis for a course cannot be changed after the eighth week of instruction. Courses dropped after the third week of instruction will appear on the record with a “W” notation. After the third week of instruction, a fee is required to file the petition to change the class schedule.
Enrollment on Satisfactory/No Credit Basis

Undergraduate students in good academic standing may receive credit for courses undertaken and graded "S" up to a limit of one-third of the total units undertaken and passed on the Riverside campus at the time the degree is awarded. Normally, this means no more than 4 units of "SNC" per quarter. The total also includes courses that are only graded "SNC." Courses which are required in, or prerequisite to, a major may not be taken on an SNC basis unless approved by the chair of the major department. Students on special status or limited status may take courses on an SNC basis only with the approval of the associate dean.

A student may elect "SNC" or delete "SNC" from a course by filing a petition (Add/Drop form) with the Registrar. The deadline is the end of the eighth week of instruction and is listed each quarter in the Schedule of Classes.

Regulations governing the SNC option are described under Credit and Grades in the Academic Regulations section of this catalog.

Part-time Study

For details, see Part-Time Study under the Finances and Registration section of this catalog.

Petitions

A petition is a form representing a student's need or desire to be excepted from any standard rule or regulation in the University. It is the only way to obtain formal approval from the department, the college or school, the Registrar, or whomever has authority over a particular request. Some petitions carry a small fee; others are free.

An approved petition for a waiver or substitution in degree requirements represents an agreement between the student, the college or school, and in some cases, the department chair, granting the student an exception from the existing regulations.

Petitions are also used at UCR to change college or major, enroll in fewer units than regulations permit, make late changes to a class schedule, obtain credit by examination, concurrent enrollment, or withdraw from the University. Petitions for most of these exceptions are available in the Student Affairs Office.

Credit by Examination

To earn credit for a course by examination without formal enrollment in that course, students must be in residence and in good academic standing.

Before the examination may be given, arrangements and approval for examination for degree credit must be made with the instructor appointed to give the examination, a faculty advisor (if the major department requires it), and the associate dean. Petitions must be filed with the Office of the Registrar no later than the third week of instruction. Credit by examination is not allowed for English Composition courses.

The results of all examinations for degree credit are entered on students' records as though they had actually taken the courses of instruction. There is a $S service charge for each petition. The credit by examination procedure may not be used as a means of improving a previous grade.

Undergraduate Credit for Graduate Courses

Students who have a grade point average of at least 3.00 in all courses taken in the University or have shown exceptional ability in a special field may take a graduate course for undergraduate credit with the permission of the instructor concerned. Students must have completed at least 18 upper-division quarter units basic to the subject matter of the course.

Progress Toward the Degree

At the close of each quarter, the courses, units, grades, and grade points earned are added to the student's cumulative University record. This record summarizes progress toward a degree. Lack of adequate progress may jeopardize continued registration.

Declaration of Candidacy

A degree audit of remaining requirements for the bachelor's degree should be requested from the major department or program office three quarters before the expected date of graduation. The student's name will then be entered on the appropriate degree list. Students who find it necessary to amend the prospective date of graduation during the quarter in which they intend to graduate need to notify the Student Affairs Office, in writing, as soon as possible.

Applications for graduation are available in the College of Humanities, Arts, and Social Science's Student Affairs Office and the major department or program office and must be filed in the students' major department by the deadline established for the quarter in which graduation is intended. The deadline for filing applications for graduation is printed in the Schedule of Classes each quarter.

Applications are not accepted after the deadline established for the quarter. If for any reason a student does not meet the requirements for graduation after announcing candidacy, or if a student fails to meet the deadline for filing, an application must be filed for a subsequent quarter.

Students graduating in absentia after an absence of one or more quarters must apply for readmission to the University and file an Application for Graduation with the Office of the Registrar.

Withdrawals

Students may withdraw from the University prior to the end of instruction, for serious personal reasons, with the approval of the associate dean. Forms are available in the Student Affairs Office and require certain clearances from other offices after the dean considers the withdrawal.

Preparing for the Professions

A wide variety of majors and programs available in the College of Humanities, Arts, and Social Sciences provides an excellent background and preparation for immediate entry into the job market or for graduate and professional schools. Some of these are listed below; however, students are urged to see their faculty advisor or a counselor in the Career Services Center for further information.

The Arts

Undergraduate majors in the arts at UCR are designed to provide a solid liberal arts education at the same time as they provide essential training in the practical techniques of the specific art field involved. This means that arts majors provide a broad educational background, on a par with the other majors in the college, which prepares each student for effective participation in any job market where educational breadth is important.

Through the thorough practical training in each art field, an increasing number of UCR students are finding attractive career opportunities in the visual arts, writing, dance, music, and theater arts. Not that it has become any easier to practice as an artist or performer; these remain options best followed by the most talented and determined. However, the opportunities in many arts-related fields are increasing as the role of the arts continues to expand. Such opportunities include positions in teaching, music and dance therapy, graphics, theater management, costume design, performing arts management, fine arts publication, the recording industry, the arts, and criticism. Moreover, new professions, which will open yet wider vistas in coming years, are evolving for those trained in the arts.
UCR students who graduate with a major in one of the arts have consistently gained admission to graduate schools at outstanding universities, conservatories, and professional schools throughout the country.

At UCR, students may major in Art, Art History, Creative Writing, Dance, Film and Visual Culture, Music, or Theatre. At the graduate level, the M.A. degree is offered in Art History, and Music. A Ph.D. is offered in Dance History and Theory.

The Chancellor has provided performance awards for excellence in the practice of the arts for students who have already achieved high proficiency in their art form upon entry into the University and who will continue to practice their art forms while students at UCR. For further information, contact the departments of Art, Dance, Music, Theatre, and Creative Writing.

The Gluck Fellows Program of the Arts at UCR provides Gluck Faculty, Graduate, and Undergraduate Fellows the opportunity to bring their respective art forms to elementary, middle, and high school students and nursing home residents who have little or no access to the arts. The departments of Art, Art History, Creative Writing, Dance, Music, and Theatre as well as the Sweeney Art Gallery and UCR/California Museum of Photography participate in the Gluck Fellows Program of the Arts. Students interested in participating in the Gluck Fellows Program of the Arts should check with individual departments.

**Business Administration**

While no specific major is required for admission to most graduate schools of administration or management, the undergraduate programs in Business Administration, Business Economics, and the various majors offered in combination with Administrative Studies provide excellent preparation. At UCR, the curriculum in these majors stresses the principles of managerial decision making and methods of gathering and analyzing the diverse data on which decisions must be based.

It is also important to note that other majors in the liberal arts can serve as effective preparation for entry into the worlds of management and business. Any major curriculum that includes substantial emphasis on oral and written expression and analytic and critical thinking can serve this purpose, particularly if accompanied by a suitable cluster of courses in business and management topics. Internships, which are available in business and industry settings, can assist in clarifying educational and personal goals, allowing exploration of alternative career options, and providing the opportunity to apply academic background to a practical, real world experience.

Students who wish to pursue a graduate degree in the Business Administration field may wish to consider UCR’s A. Gary Anderson Graduate School of Management.

**Law**

Most law schools require a baccalaureate degree. Law schools do not require a uniform prelaw course of study or a specific college major; backgrounds in the physical sciences are as acceptable as those in the social sciences and humanities. However, law schools in general do recommend that the prelaw student attempt to reach several goals during the undergraduate years: an understanding of the development of social, political, and economic institutions; an ability to communicate well, both orally and in writing, the capacity to think clearly, carefully, and independently; and a habit of disciplined study. Therefore, there is no specific, formal prelaw curriculum that a student must take.

Most law schools require applicants to take the Law School Admission Test, administered regionally by the Educational Testing Service. The test is administered at UCR on three occasions during the year. Applications for and information about this test may be secured in the office of the Department of Political Science or by writing to the Educational Testing Service, Princeton, N.J. 08540.

Students who are considering applying to law schools are strongly urged to consult with the prelaw advisor in the Department of Political Science, 2206 Watkins Hall.

**Librarianships**

All library schools accredited by the American Library Association require a baccalaureate degree for admission and usually a reading knowledge of one or two languages other than English. A broad general background, supported by the ability to read rapidly and intelligently, is helpful. The knowledge, in depth, of the literature of some subject area is especially advantageous. All subject fields, including the biological and natural sciences, the humanities, and the social sciences may prepare a student for graduate study in librarianship.

In addition to career opportunities in public, school, and academic libraries, special librarians may work in government agencies, and in commercial and industrial firms, such as pharmaceutical companies, banks, and advertising agencies.

**Museums, Archives, and Historic Preservation**

The American Association of Museums and The Society of American Archivists have designated the master’s degree as the professional degree level for careers in museums and archives. The Program in Historic Resources Management for the M.A. (Department of History) provides professional education and training for these careers, as well as for careers in general historic preservation and public history.

The UCR/California Museum of Photography is of significant value to those interested in photographic history and museum practices, as well as to those with creative interests in photography.

**Public Administration**

Government agencies offer many administrative career options including jobs in personnel, budget administration, labor relations, program analysis and public information. These types of positions may require a bachelor’s or a master’s degree or a combination of degrees plus experience. Students interested in a career in public information are encouraged to acquire a broad liberal arts education at the undergraduate level. An undergraduate major in any of the social sciences provides appropriate preparation for graduate work in public administration. Special attention is called to the majors in Political Science/Administrative Studies, Political Science/International Affairs, and Public Service-Political Science. At UCR, students may gain valuable experience in government agencies through the Academic Internship Program. In addition to numerous local internship settings, there are quarter-away internships available in several Sacramento and Washington, D.C. offices.

**Social Welfare**

Full professional training usually consists of two years of graduate training leading to the degree of Master of Social Work.

Students planning to seek employment in social welfare after completing the baccalaureate degree should prepare in the fields of psychology (particularly child and adolescent psychology and the study of personality), sociology (with emphasis on society and personality, social thought and social organization), economics, political science, anthropology, and statistical and research methods in the social sciences. The B.A. or B.S. degree in Social Relations is an excellent preparation both for direct entry into social welfare positions and for graduate professional training. Students who plan to enter a professional school of social work following undergraduate training should consult with an advisor at UCR for the best selection of classes.

Career opportunities for students with the B.A. or B.S. degree include positions as deputy probation officer, social worker, group counselor,
corrections officer, substance abuse counselor, and community relations worker. Internships are very appropriate aspects of the undergraduate program in preparation for such careers.

Teaching Credential Programs
Students planning a career as a teacher may wish to consider one of the majors that offers a subject matter preparation program. Currently, 38 subject-matter preparation programs for the Multiple Subjects Credential are available at UCR. Having completed such a program, a student may apply to UCR’s teaching credential program without being required to pass a subject-matter competence examination. Specific details and counseling are available at individual department offices and the Graduate School of Education and at [http://www.education.ucr.edu/teach](http://www.education.ucr.edu/teach).

Students who are considering working toward any teaching credential should attend one of the credential information seminars offered by the Teacher Education Services Office (1215 Sproul) for advice in the planning of an academic program.

The College of Natural and Agricultural Sciences offers the Bachelor of Arts and the Bachelor of Science degrees. The B.A. degree provides for both broad general education and major field specialization. The B.S. degree, obtainable in most of the College majors, stresses advanced work in the major and associated fields. All degree programs provide students with an opportunity to develop an understanding and appreciation of man’s relationship to society, in addition to preparing them for careers in their fields of specialization.

The variety of degree programs and the flexibility of each provide great freedom of choice to students. Cooperative efforts between departments in the College provide for interdepartmental (interdisciplinary) majors. Students may elect to take double majors within the College or between this college and another. See the college’s Student Affairs Office for information on double majors. Individual majors may be planned for students who find that individual goals can be accommodated through the resources and interested faculty at UCR. Information and regulations on individual majors may be obtained from the college’s Student Affairs Office.

For information on graduate degrees see the Graduate Studies section of this catalog.

Majors
A major is a coordinated group of upper-division courses (100-199 series) in a field of specialization. Early choice of a major is desirable. The courses for any particular major are specified by the relevant department or departmental group, and they must provide at least 36 upper-division units of credit, normally taken on a letter grade basis. No more than 84 units in any one discipline may be applied to the degree.

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<th>Department/Program</th>
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<td>Biology Option</td>
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<td>Biology</td>
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<td>Conservation Biology</td>
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<tr>
<td>Physics Option</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Statistics Option</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Computational Mathematics</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Physical Sciences¹</td>
<td>B.A.</td>
</tr>
<tr>
<td>Physics</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Psychobiology²</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Statistics</td>
<td>B.A. B.S.</td>
</tr>
<tr>
<td>Statistical Computing Option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Quantitative Management Option</td>
<td>B.S.</td>
</tr>
</tbody>
</table>

Disciplinary Minors
Botany/Plant Sciences
Chemistry
Entomology
Environmental Science
Mathematics
Neuroscience
Statistics (Applied)

¹The B.A. in Physical Sciences program is not currently accepting students.
²The B.A. and B.S. degrees in Psychobiology are discontinued. Readmitted and transfer students accepted prior to Fall 2000 are allowed to complete the degree requirements but must graduate by June 2002. For a listing of degree requirements consult the 1997-98 University of California, Riverside General Catalog.
Admission to Majors

Admission of Freshmen

Applicants to majors in the College of Natural and Agricultural Sciences who excel in the academic criteria, with additional emphasis on advanced mathematics and laboratory science preparation, will be considered. It is strongly recommended that students have sufficient mathematics competency to qualify for college level calculus at the time of enrollment.

Transfer Students

The College of Natural and Agricultural Sciences emphasizes additional math and science preparation in its selection of students. Applicants must have a GPA of 2.70 or better in transferable course work. Applicants to majors in Biochemistry, Biological Sciences, Biology, and Chemistry must complete one-year sequences in three areas of science and/or mathematics. The same preparation is recommended for applicants to other majors.

The Intersegmental General Education Transfer Curriculum (IGETC) is not accepted for students planning to transfer to the College of Natural and Agricultural Sciences. Courses taken to satisfy the IGETC may be applied to the college’s breadth pattern.

Choosing a Major, Undeclared Majors

Although freshmen may choose an academic major on entering UCR, those who are unsure about specific academic goals may request to be admitted to the college as an undeclared student, choosing one of three options in this category.

1. Undeclared — Life Sciences, for students interested in Biochemistry, Biology, Biological Sciences, Botany/Plant Science, Conservation Biology, Entomology, or Neuroscience

2. Undeclared — Mathematical Sciences, for students interested in Mathematics, or Statistics

3. Undeclared — Physical Sciences, for students interested in Chemistry, Earth Sciences, Environmental Sciences, or Physics

Students who follow the recommended program for any of the three undeclared options will be prepared to enter a wide variety of science majors. Even if their plans change several quarters later, they will have avoided academic difficulty by planning a sensible, basic preliminary strategy. Individuals entering as students in one of the three undeclared options are advised through the college’s Student Affairs Office by both professional staff and faculty from diverse science departments. Actual admission into degree programs is predicated upon successful completion of courses with satisfactory grades. Transfer into another college requires performance judged to be satisfactory by that college.

All students with 90 or more units toward a degree are expected to declare a major. To declare a major, obtain approval from the college’s Student Affairs Office by filing a Change of Major. Students are expected to declare a major by the beginning of their junior year (completion of 90 units).

If students in one of the three undeclared options feel their interests lie primarily in the areas of humanities or social sciences, advising can be obtained in the College of Humanities, Arts, and Social Sciences, (909) 787-3683. Those interested in engineering or computer science can be advised in the College of Engineering, (909) 787-5651.

Double Majors

A declaration of a second major must be filed at the college’s Student Affairs Office at least two quarters before graduation and approved by both academic major advisors and the associate dean. At the time of filing, a student must have completed 120 units, with at least 18 upper-division units in the primary major and at least 8 upper-division units in the secondary major. Of the required upper-division units, a minimum of 24 (no more than 4 of which can be 190-199 courses) must be unique to each major. A student must also be in good academic standing and be able to complete both majors without exceeding the 216 unit college maximum. A student may elect a second major in a department or interdisciplinary group of another college. A declaration of such a second major must be signed by the associate deans of both colleges and filed by the student with the primary college. A student will meet requirements of both primary and secondary majors and the college requirements of the primary major if they are both in the same baccalaureate class. If the two majors lead to different degrees (B.S. and B.A.), that fact will be noted on the transcript, but only one diploma indicating both degree designations will be issued upon successful completion of such a program. Furthermore, if the double major is a mixed B.S./B.A., the college requirements for both majors must be met. Information on how to file for double majors may be obtained from the college’s Student Affairs Office.

Changing Majors

Students may change majors if they are in good standing and will not exceed the unit limitation of 216 units toward the degree. Students can petition to change their major within the college or transfer from another college to the College of Natural and Agricultural Sciences. Students interested in transferring to the College of Natural and Agricultural Sciences should consult with an advisor in the major department regarding specific prerequisite courses. Students who have attained junior standing are reviewed for course coverage and grade point average for the new major.

Students who fail to attain a grade point average of 2.00 (“C”) in preparation for the major or major courses may be denied the privilege of entering or continuing in that major.

Minors

The College offers minor programs. Each minor consists of not fewer than 20 nor more than 28 units of organized upper-division courses. No more than 4 units of 190-199 courses may be used in fulfilling the upper-division unit requirement for a minor. No more than 8 units may be counted towards both the major and the minor. The department, program, or interdisciplinary committee offering the minor is responsible for student and administrative issues pertaining to the minor. Students must file a declaration of a minor by filing a petition with the college’s Student Affairs Office at least two quarters before graduation and must be in good academic standing at the time of filing. A minor requires the signature of the department chair or chair of the faculty committee which supervises the minor and the signature of the associate dean.

University Honors Program

For a description of the University Honors Program, see Supplementary Education Programs in the front of this catalog. For a listing of requirements and courses, refer to University Honors Program in the Curricula and Courses section.

Financial Assistance

The College of Natural and Agricultural Sciences maintains funds for undergraduate scholarships. Application materials and information are available in the college’s Student Affairs Office during spring quarter.

UCR/UCLA Program in Biomedical Sciences

The College of Natural and Agricultural Sciences offers a unique opportunity for outstanding high school students to complete a rigorous program of accelerated study leading to the M.D. degree one year earlier than it is usually granted. This program involves courses structured to combine the basic sciences of biology, chemistry, physics, and mathematics, and
courses in the humanities and social sciences, with courses normally taught in the first two years of medical school. The curriculum is taught cooperatively by faculty of UCR and the UCLA School of Medicine, and leads in seven years to an M.D. degree from UCLA, as well as a B.S. in Biomedical Sciences from UCR after the fourth year in the program. Progression through the program is by screening and interviews at the end of each of the first three years. After this period, up to 24 qualified first-year medical students are selected. Instruction continues in residence at UCR until the end of the fifth year, at which time students will transfer directly to the UCLA School of Medicine for the last two years of clinical work. Information for interested students concerning the program and the suitability of electing to major in Biomedical Sciences should be obtained from the Program Counselor. Address inquiries to: Division of Biomedical Sciences, University of California, Riverside, Riverside, CA 92521-0121; http://biomed.ucr.edu.

Degree Requirements

Students must meet three levels of requirements for the Bachelor of Arts or Bachelor of Science degree: General University requirements, College requirements, and major requirements.

General University Requirements

General University requirements are listed at the beginning of the Undergraduate Studies section. For information on University regulations see the Academic Regulations section of this catalog.

In addition to the above General University requirements, the College of Natural and Agricultural Sciences has the following unit requirement.

Unit Requirement

Students are not normally expected to take significantly more than 180 units to obtain the bachelor’s degree. After having credit for 216 units, a student will not be permitted to continue except by approval of the associate dean when specific academic or professional reasons are involved.

The following credit limitations apply for all students enrolled in the College:

1. After completing 105 quarter units at a community college, students are not allowed further units for courses completed at a community college.
2. No more than 6 units in physical education activity courses (PED 001) may be applied toward the bachelor’s degree.
3. No more than three courses in the 300 series of courses may be applied toward the bachelor’s degree. Credit is not granted for 400 series courses taken in UC Extension.

College Policy for the Intersegmental General Education Transfer Curriculum

The Intersegmental General Education Transfer Curriculum is not accepted for students planning to transfer to the College of Natural and Agricultural Sciences. It does not adequately cover the lower-division mathematics and science prerequisites required for majors in this college.

College Breadth Requirements

For the following requirements, a course is defined as a block of instruction which carries credit of 4 or more units. Courses taken in the department or program of a student’s major (including courses cross-listed with the major) may not be applied toward the breadth requirements except for Biology majors and Biological Sciences majors in connection with the Biological Sciences requirement. However, courses outside the major discipline, but required for the major, may be applied toward satisfaction of these requirements.

Some majors in the college may have specific course requirements for meeting the following breadth requirements. Check under individual major requirements in the Curricula and Courses section of this catalog. Requirements are for both the B.A. and the B.S. degrees unless specified separately.

English Composition

Students must demonstrate adequate proficiency in English Composition by completing a one-year sequence of college-level instruction in English Composition with an average grade of “C” or better and no grade lower than “C-.” UCR’s sequence is ENGL 001A, ENGL 001B, and ENGL 001C or ENGL 01SC. Transfer students who have credit for one semester of English Composition from another institution are required to take two additional quarters, i.e., ENGL 001B and ENGL 01SC or ENGL 01SC. Students have the option of using a score of 3 on the College Board Advanced Placement Test in English to satisfy ENGL 001A; they must complete ENGL 001B, and ENGL 001C or ENGL 01SC. Students with a score of
4 or 5 on the College Board Advanced Placement Test in English have satisfied ENGL 001A and ENGL 001B; they must complete ENGL 001C or ENGL 01SC.

Students with an overall grade point average under "C" in the ENGL 001A, ENGL 001B, and ENGL 001C or ENGL 01SC sequence will be required to repeat composition courses as necessary in order to meet the required "C" average minimum. It may be necessary to repeat one or more of ENGL 001A, ENGL 001B, and ENGL 001C or ENGL 01SC courses in which a grade of "C" was earned in order to fulfill the three-quarter English composition average of "C" or better. However, courses with a grade of "C" cannot be repeated for credit to alter the transcript grade point average.

Beginning with their initial matriculation, students should enroll in an English composition course each quarter they are registered at UCR until the sequence of preliminary Basic Writing courses, if needed, and ENGL 001A, ENGL 001B, and ENGL 001C or ENGL 01SC is completed with satisfactory grade point average. A student may not receive baccalaureate credit for any work in English composition taken prior to completing the Subject A requirement.

**Humanities**

**For the B.A. degree:** 20 units

1. One course in world history (At UCR, courses that satisfy this requirement are HIST 010, HIST 015, or HIST 020.)
2. One course in the Fine Arts (Art; Art History; Creative Writing courses in poetry, fiction, or playwriting; Dance; Music; Theatre)
3. Two courses from among
   a) Literature (English, Comparative Literature and Foreign Languages, Hispanic Studies)
   b) Philosophy
   c) Religious Studies
4. One additional course from
   a) History, the Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 4 or above
   c) A humanities course offered by the following departments or programs
      - Ethnic Studies
      - Creative Writing (courses in journalism)
      - Humanities and Social Sciences
      - Latin American Studies
      - Linguistics
      - Women's Studies

No course used to satisfy the English Composition requirement will apply toward Humanities credit.

No more than two courses in performance may be counted toward the Humanities requirement.

**For the B.S. degree:** 12 units

1. One course in world history (At UCR, courses that satisfy this requirement are HIST 010, HIST 015, or HIST 020.)
2. One course from among the following:
   a) Fine Arts (Art; Art History; Creative Writing courses in poetry, fiction, or playwriting; Dance; Music; Theatre)
   b) Literature (English, Comparative Literature and Foreign Languages, Hispanic Studies)
   c) Philosophy
   d) Religious Studies
3. One additional course chosen from
   a) History, the Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 3 or above
   c) Humanities courses offered by Ethnic Studies, Creative Writing (courses in journalism), Humanities and Social Sciences, Latin American Studies, Linguistics, or Women's Studies

No course used to satisfy the English Composition requirement will apply toward Humanities credit.

No more than one course in performance may be counted toward the Humanities requirement.

**Social Sciences**

**For the B.A. degree:** 16 units

1. One course from Economics or Political Science
2. One course from Anthropology, Psychology, or Sociology
3. Social Science courses offered by Ethnic Studies, Environmental Sciences, Geography (cultural geography courses), Human Development, Humanities and Social Sciences, Women's Studies, or one of the disciplines in (1) or (2) above

**For the B.S. degree:** 12 units

1. One course from Economics or Political Science
2. One course from Anthropology, Psychology, or Sociology
3. Social Science course offered by Ethnic Studies, Environmental Sciences, Geography (cultural geography courses), Human Development, Humanities and Social Sciences, Women's Studies, or one of the disciplines in (1) or (2) above

Course work which may be taken to be used in partial satisfaction of the Humanities and the Social Sciences requirements must be evaluated by the college’s Student Affairs Office. The college’s Student Affairs Office, in consultation with the College Executive Committee, determines which courses apply to these requirements. The college’s Student Affairs Office will implement this policy. It is the student’s responsibility to verify those courses which fulfill either the Humanities or the Social Sciences requirement, particularly the series of courses in cultural geography.

**Ethnicity:** 4 units

One course dealing with general concepts and issues in the study of race and ethnicity in California and the United States. Courses that satisfy this requirement must concentrate on one or more of four principal minority groups (African American, Asian American, Chicano/Latino, and Native American). These courses must be comparative in nature, analyzing the minority group experience within the present and historical context of other racial and ethnic groups, such as European-American minorities. The courses are to be offered by or cross-listed with the Department of Ethnic Studies.

Regardless of the student’s college and major, the course may be counted toward the Humanities or the Social Sciences graduation requirements, depending upon the course’s content as evaluated by the Committee on Educational Policy. Check with the college’s Student Affairs Office for the courses that fulfill the Ethnicity requirement.

**Foreign Language**

**For the B.A. degree:** 16 units

This requirement may be fulfilled in one language by completing course 4 or demonstrating equivalent proficiency, or by demonstrating equivalent proficiency (level 2) in each of two languages. American Sign Language may also be used to satisfy this requirement. Biology majors must complete four quarters of one language. Students who are pursuing a B.A. degree and who have not completed a foreign language course may
enroll in a level-1 foreign language course. However, students must take a placement exam if they plan to take a course in the same foreign language that they studied in high school. The placement exam may be taken only once in each subject during a student's UCR career. Transfer students who have taken a college-level foreign language course should consult with an advisor.

Natural Sciences and Mathematics: 20 units
1. One course in Mathematics, Statistics, or Computer Science
2. One course in Biological Sciences (Biochemistry, Biology, Botany and Plant Sciences, Entomology, Nematology, or Plant Pathology), the course must include a laboratory
3. One course in Physical Sciences (Chemistry, Physics, Earth Sciences, excluding cultural geography courses)
4. Two additional courses from areas (2) or (3) above or in physical and/or biological science courses offered in the Department of Environmental Sciences

This requirement may automatically be satisfied by lower-division requirements for the major.

Additional Courses: 16 units
For the B.S. degree:
An additional 16 units of substantive course work in the student's chosen major or fields related to the major is required. The additional course work is specified by the major department.

Major Requirements
Detailed requirements for each major are found under the department listings in the Curricula and Courses section of this catalog.

A major in the College of Natural and Agricultural Sciences shall consist of not fewer than 36 or more than 60 upper-division units. No more than 9 units of courses in the 190-199 series may be counted in fulfilling the upper-division units needed for the major.

Not later than the beginning of the junior year, students need to consult with their advisor and choose a major. A grade point average of at least 2.00 (C) in the upper-division courses taken in the major field is required for graduation.

Life Sciences Core Curriculum
A lower-division core curriculum in the Biological Sciences has been developed that will prepare students for any upper-division major in the Biological Sciences. All students who are life sciences majors (Biochemistry, Biology, Biological Sciences, Biomedical Sciences, Botany/Plant Science, Conservation Biology, Entomology, and Neuroscience) will complete a uniform core curriculum prior to advancing to upper-division courses. The curriculum is Introductory Biology (1 year), General Chemistry (1 year), Organic Chemistry (1 year), Calculus (2 quarters), Physics including laboratory (1 year), Statistics (1 quarter), and Introductory Biochemistry (1 quarter). No more than 12 units of upper-division life sciences courses not being used to satisfy the core may be taken prior to completion of the core.

College Policies and Procedures
For detailed information on UCR policies and regulations see the Academic Regulations section of this catalog.

College Regulations
Detailed information and specifics with regard to the College regulations governing undergraduate student status as approved by the faculty and contained in the Manual of the Riverside Division of the Academic

College of Natural and Agricultural Sciences
Breadth Requirement Unit Summary

<table>
<thead>
<tr>
<th></th>
<th>For the B.A.</th>
<th>For the B.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition</td>
<td>Varies</td>
<td>Varies</td>
</tr>
<tr>
<td>Humanities</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Ethnicity (4 units)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Natural Sciences and Mathematics</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Total Units</td>
<td>72 plus</td>
<td>60 plus</td>
</tr>
</tbody>
</table>

English Composition

The 4-unit ethnicity requirement can be applied to either the Humanities or the Social Sciences requirement, depending on content.

Student Responsibility
Students are responsible for meeting deadline dates regarding enrollment, add/drop, change of grading basis, credit by examination, withdrawal, declaration of candidacy, and other actions. The deadline dates are in the Schedule of Classes and must be observed. Advising can be obtained in the college's Student Affairs Office, 1140 Batchelor Hall.

Faculty Advisors
All students who declare a major upon entrance to the College of Natural and Agricultural Sciences are assigned to a department granting the degree for that major or area of specialization. New students should report to their major department for assignment of faculty advisors. Students in one of three undeclared options in the College are advised in the college's Student Affairs Office.

Students should keep in touch with their advisor on all academic matters, including choice of courses, consideration of a major, and requirements for graduation. Before consulting the advisor, students should formulate a tentative program according to their interests and needs and should be familiar with General University, College, and major requirements.

It is important that each student keep in mind that the advisor serves as a mentor, but does not administer the student's program. Students must be responsible for ensuring that they meet all requirements for graduation.

General curriculum counseling can also be obtained in the college's Student Affairs Office, 1140 Batchelor Hall.

Course Enrollment
Before each quarter, students advance enroll in all courses they plan to take. Every student's course schedule must be approved by the student's academic advisor, or for students in the three undeclared options, the college's Student Affairs Office. Students are expected to register and enroll by the date set by the campus (see the Schedule of Classes for details).
Since the College expects all students to make regular progress toward their degrees, class schedules of less than 12 units must be approved by the associate dean. Repeated courses are considered part of the total unit load.

Students on probation may not register for more than 13 units in a quarter without consent of the associate dean. No student may enroll in less than 8 units (two classes).

With the approval of their faculty advisor and the course instructor, students may add courses to their class schedule up to the end of the third week of classes. With the approval of their advisor and after consulting with the instructor of the course, students may, without penalty, drop a course up to the end of the fifth week or change grading basis up to the end of the eighth week. Students who drop a course after the third week receive a "W" on the transcript.

Enrollment on a Satisfactory/No Credit Basis

Students in this college who are not on probation may take nonmajor courses on an S/NC basis and other courses graded only on an S/NC basis, provided they do not exceed one third of the total units undertaken and passed (graded "S") on the UCR campus at the time the degree is awarded.

A student may elect "S/NC" or delete "S/NC" from a course during the online and telephone registration period, or later in the quarter by filing a petition (Add/Drop form) with the Registrar. The deadline is the end of the eighth week of instruction and is listed each quarter in the Schedule of Classes.

Regulations governing the S/NC option are described under Credit and Grades in the Academic Regulations section of this catalog.

Credit by Examination

A student may petition for the privilege of examination for degree credit without formal enrollment in a particular course, but must be in residence and not on academic probation. Arrangements for examination for degree credit must be made with the student's faculty advisor. Approvals of the faculty advisor, the associate dean of the college, and the instructor who is agreeing to give the examination are necessary before the examination may be given. The results of all examinations for degree credit are entered on the student's record as though the student had actually taken the courses of instruction.

Progress Toward the Degree

At the close of each quarter, the courses, units, grades, and grade points earned are added to the student's cumulative university record. This record summarizes progress toward a degree. Lack of adequate progress may jeopardize continued registration.

Declaration of Candidacy

A degree audit of remaining requirements for graduation should be requested at the college's Student Affairs Office three quarters before the expected date of graduation. If it is necessary to amend the prospective date of graduation during the quarter in which graduation is expected, the student must notify the college's Student Affairs Office, in writing, as soon as possible. Applications for graduation are available in the college's Student Affairs Office and must be filed in the Student Affairs Office by the deadline established for the quarter in which graduation is expected. The deadline for filing applications for graduation is printed in the Schedule of Classes each quarter.

Applications are not accepted after the deadline established for the quarter in which the student intends to graduate. If for any reason the student does not meet the requirements for graduation after announcing candidacy, or fails to meet the deadline for filing, a new application must be filed for the subsequent quarter.

Students graduating in absentia after an absence of one or more quarters must apply for readmission to the university and file an Application for Graduation with the Office of the Registrar.

Preprofessional Training Programs

Undergraduate preparation for several professional careers can be acquired in the College of Natural and Agricultural Sciences. Brief explanations of preprofessional training programs are given below.

Forestry

Freshmen at UCR who plan to transfer after their sophomore year to UC Berkeley's College of Natural Resources, forestry program, should enroll in UCR's Department of Botany and Plant Sciences. Interested students should consult the UC Berkeley General Catalog and contact Berkeley's College of Natural Resources for advising. Assistance is also available from the College of Natural and Agricultural Sciences' Student Affairs Office at UCR.

Medical Technology

Prospective licensed clinical laboratory scientists are offered preprofessional programs in which they obtain their bachelor's degree in either biochemistry or biology. Students must apply independently to any of the numerous state-approved, one-year training programs in clinical laboratory technology offered by hospitals and medical laboratories. Instruction in clinical laboratory technology begins after the receipt of the bachelor's degree. Following successful completion of this training and testing by the state of California, the student is eligible to become a licensed Clinical Laboratory Scientist. Since requirements for entering the field of medical technology change periodically, it is especially recommended that the interested student obtain current information from the Health Professions Advising Office, 1145 Batchelor Hall (http://www.cnas.ucr.edu/~health) or from the state of California Department of Health.

Medicine and Dentistry

Although the specific requirements of all medical and dental schools cannot be listed here, the general requirements are discussed below to indicate the various preprofessional programs available at UCR.

More than 90 percent of the students admitted to medical schools in the United States have attained the B.A. or the B.S. degree, and a large percentage of those admitted to dental schools have three or more years of undergraduate work.

Leaders in medical and dental education urge prospective students to arrange their programs to obtain a broad general education, since the subject matter of the humanities and social sciences is not offered by the professional schools. It is recommended that students preparing to seek admission to medical or dental school obtain a bachelor's degree, to which all of UCR's preprofessional programs lead.

A student may satisfy the requirements for admission to medical or dental school in one of the following ways:

1. Completing the Biology major with emphasis in the Medical Professions specialization
2. Completing the Biochemistry major with a Biology emphasis
3. Completing the major in Chemistry
4. Majoring in any department, but fulfilling concurrently the specific course requirements of medical or dental schools
Most medical and dental schools recommend that the following courses be taken in a preprofessional degree program. These courses should include laboratories.

<table>
<thead>
<tr>
<th>Course Work</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>General chemistry</td>
<td>1</td>
</tr>
<tr>
<td>Organic chemistry</td>
<td>1</td>
</tr>
<tr>
<td>Physics</td>
<td>1</td>
</tr>
<tr>
<td>General biology</td>
<td></td>
</tr>
<tr>
<td>Upper-division biochemistry</td>
<td></td>
</tr>
<tr>
<td>Upper-division genetics</td>
<td></td>
</tr>
<tr>
<td>Mathematics through integral calculus</td>
<td></td>
</tr>
</tbody>
</table>

**Other Health Professions**

In addition to those described above, UCR offers the preprofessional training required for entrance to other health professional schools, including optometry, pharmacy, podiatry, nursing, physical therapy, and dental hygiene, among others. Information about these can be obtained from the Health Professions Advising Office, 1145 Batchelor Hall [http://www.cnas.ucr.edu/~health](http://www.cnas.ucr.edu/~health) or Career Services Office (Veitch Student Center).

**Teaching**

The California Commission on Teacher Credentialing has established guidelines and standards that prepare students for teaching credentials. For a description of how students can prepare for the multiple-subject (elementary) and single subject (secondary) credentials, please refer to individual departments in the Curricula and Courses section of this catalog.

After earning the bachelor’s degree, the prospective teacher registers for an additional year of training in education theory and practice needed to obtain a teaching credential. Anyone considering obtaining a teaching credential should attend one of the credential information seminars offered by the Teacher Education Services Office, 1215 Sproul Hall, and consult with an advisor early in the planning of an academic program.

**Veterinary Medicine**

Students preparing for studies in veterinary medicine may enroll in the Biology program with a Medical Professions specialization emphasis, or in the Biochemistry program with a Biology emphasis.

Admission to programs in veterinary medicine is highly competitive. The course work at UCR is designed to prepare students to meet the requirements for admission to California’s only veterinary program, the School of Veterinary Medicine at the University of California, Davis. Students should refer to the UC Davis General Catalog or the Health Professions Advising Office, 1145 Batchelor Hall [http://www.cnas.ucr.edu/~health](http://www.cnas.ucr.edu/~health) for additional details.

**Course Work Years**

<table>
<thead>
<tr>
<th>Course Work</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics through integral calculus</td>
<td></td>
</tr>
</tbody>
</table>

**The Marlan and Rosemary Bourns College of Engineering**

Student Affairs
A159 Bourns Hall
University of California, Riverside
Riverside, CA 92521-0144

The Marlan and Rosemary Bourns College of Engineering emphasizes fundamental disciplines of engineering and computer science, introducing students to the new technologies necessary for today’s highly technical environments.

The vision of the College of Engineering is to become a nationally recognized leader in engineering research and education. Its mission is to:

- Produce engineers with the educational foundation and the adaptive skills necessary to serve rapidly evolving technology industries
- Conduct nationally recognized engineering research focused on providing a technical edge for the United States
- Contribute to knowledge in both fundamental and applied areas of engineering
- Provide diverse curricula that will instill in our students the imagination, talents, creativity, and skills necessary for the varied and rapidly changing requirements of modern life and to enable them to serve in a wide variety of other fields that require leadership, teamwork, decision making, and problem-solving capabilities
- Be a catalyst for industrial growth in the Inland Empire region of Southern California

The College offers the following undergraduate majors:

<table>
<thead>
<tr>
<th>Major</th>
<th>Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Engineering</td>
<td>B.S.</td>
</tr>
<tr>
<td>Biochemistry Option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Chemistry Option</td>
<td>B.S.</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>B.S.</td>
</tr>
<tr>
<td>Computer Science</td>
<td>B.S.</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>B.S.</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>B.S.</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>B.S.</td>
</tr>
</tbody>
</table>

These majors, based on the needs of the practicing professional, are founded on a solid core of mathematics and the sciences. Breadth in the educational experience is represented by requirements in the Arts, Humanities, and Social Sciences as well as by emphasis on oral and written communication skills. The principles and practice of engineering and computer science are provided in lecture and related laboratory courses. All students are required to choose a set of technical electives, emphasizing synthesis and design, to complete their undergraduate programs.

**Majors**

A major is a coordinated group of upper-division courses (courses numbered 100-199) in a field of specialization. The major may be a group of upper-division courses within a single department or program, or a group of related courses from several departments or programs. Before enrolling in upper-division courses, students may be required to gain appropriate knowledge by completing specific prerequisite courses. With the assistance of a departmental advisor, students are expected to select lower-division courses which prepare them for the advanced studies they propose to follow.

**Change of Major or Double Majors**

A student in good standing may elect to take a second major within The College. The student must file a declaration of a second major in the Dean’s Office. A course used to satisfy the requirements for one major may be used to fulfill the requirements of a second major as well. However, of the required upper-division units, a minimum of 24 must be unique to each major.
A student registered in The College and in good standing may elect a second major in another college. A declaration of such second major must be signed by the deans of both colleges and filed by the student with the primary college. A student will meet requirements of both primary and secondary majors and the college requirements of the primary major, if they are both in the same baccalaureate class. If the two majors lead to different degree designations (B.S. and B.A.), that fact will be noted on the transcript, but only one diploma indicating both degree designations will be issued upon successful completion of such a double major program. Furthermore, if the double major is a mixed B.S./B.A., the college requirements of both majors must be met. A course used to satisfy the requirements for one major may be used to fulfill the requirements for a second major as well. However, of the required 24 upper-division units, a minimum of 24 must be unique to each major.

A student who has declared a double major may graduate in one major upon the completion of all requirements for that major but may not continue in the University for completion of the second major.

A student in good standing may request transfer from one major to another by filing a petition of change with the Dean's Office.

Minors

The College currently has a minor in Computer Science. Minors in The College shall consist of not fewer than 20 nor more than 28 units of organized upper-division courses. No more than 4 units of 190-199 courses may be used in fulfilling the upper-division unit requirement for a minor. Courses used, or prerequisite to those used, in fulfilling the minor may be taken on a Satisfactory/No Credit basis only on approval of the dean. The department, programs, or interdisciplinary committee offering the minor is responsible for student and administrative issues pertaining to the minor. Students must file a declaration of a minor at least two quarters before graduation and must be in good academic standing at the time of filing. A minor requires the signature of the department chair or chair of the faculty committee which supervises the minor and the signature of the dean of the college. A grade point average of at least 2.0 in upper-division courses in the field of the minor is a graduation requirement. When all other requirements for graduation have been met, the student will be graduated without the minor if the minimum GPA in the minor field has not been met.

MESA Engineering Program

The Mathematics, Engineering and Science Achievement (MESA) Engineering Program (MEP) is an academic program utilizing collaborative learning, enrichment services, and community building. It is an effective intervention for eliminating primary institutional barriers to the educational success of historically underrepresented students in engineering. MEP works in coordination with the statewide MESA organization, campus administration, and faculty of The College, the community, and industry. All students in The College are invited to join. Participation from women, African Americans, Chicano/Latino, and Native American students is particularly encouraged. For more information, call (909) 787-6379.

University Honors Program

For a description of the University Honors Program, see Supplementary Education Programs in the front of this catalog. For a listing of requirements and courses, refer to University Honors Program in the Curricula and Courses section of this catalog.

Admission to Majors

Admission of Freshmen

Prospective College of Engineering students must complete high school programs that meet University of California requirements as described in the Undergraduate Admission section of this catalog.

In addition, appropriate high school mathematics and science coursework should include the following.

<table>
<thead>
<tr>
<th>Course Work</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra</td>
<td>2</td>
</tr>
<tr>
<td>Plane Geometry</td>
<td>1</td>
</tr>
<tr>
<td>Trigonometry</td>
<td>1/2</td>
</tr>
<tr>
<td>Chemistry or Physics, with laboratory (preferably both)</td>
<td>1</td>
</tr>
</tbody>
</table>

A supplemental screening process is used for majors in The College of Engineering which places emphasis on the grade point average earned in college preparatory course work, especially mathematics and science, and aptitude test scores. Qualification for first-year calculus is also expected. Students otherwise admissible to the University, but not qualifying for an engineering major, are offered an alternate major.

Application should be made during the priority filing period (November 1 through 30, 2000) to be considered for Fall Quarter 2001.

Transfer Students

All transfer students must meet the University of California requirements for admission as described in the Undergraduate Admission section of this catalog. These are generally sufficient for admission to the Computer Science major, although admission to engineering majors is subject to additional requirements.

The Intersegmental General Education Transfer Curriculum (IGETC) does not meet transfer requirements for engineering majors and is not recommended for the Computer Science major, as it does not provide an adequate mathematics or science background. It is not accepted in lieu of The College's breadth requirements.

Students intending to transfer to engineering majors are expected to complete the equivalent of UCR course work required in the first two years of the programs and to apply for transfer starting with their junior year. Applications to engineering majors are accepted only for fall quarter and should be submitted during the priority filing period noted above. Specific information on transfer requirements may be obtained from the Office of Student Affairs, (909) 787-5651.

Financial Assistance

The Marlan and Rosemary Bourns College of Engineering awards several scholarships to its students each year from funds provided by corporate and private sponsors. Other scholarships are available. Further information may be obtained by calling the Office of Student Affairs, (909) 787-5651.

Special Facilities

Center for Environmental Research and Technology

For a detailed description of the College of Engineering's Center for Environmental Research and Technology (CE-CERT), see Additional Research Resources in the section About UC Riverside in this catalog.
Center for Research in Intelligent Systems

For a detailed description of the Center for Research in Intelligent Systems (CRIS), see Additional Research Resources in the section About UC Riverside in this catalog.

Visualization and Intelligent Systems Laboratory

The Visualization and Intelligent Systems Laboratory (VISLab), an Electrical Engineering research facility, is described within the section on the Center for Research in Intelligent Systems (CRIS). For more details, see Additional Research Resources in the section About UC Riverside in this catalog.

Degree Requirements

Students must meet three levels of requirements for the Bachelor of Science degree: General University requirements, College requirements, and major requirements.

General University Requirements

General University requirements are listed at the beginning of the Undergraduate Studies section. For other UCR regulations including repetition of courses, concurrent enrollment, scholarship regulations, and incomplete (I) grades, see the Academic Regulations section of this catalog.

In addition to the above General University requirements, The Marlan and Rosemary Bourns College of Engineering has the following unit requirement:

Unit Requirement

Some of the majors in this College require more than the nominal University requirement of 180 units for graduation. No more than 6 units of physical education activity may be counted toward this requirement. However, after having credit for 216 units, a student is not permitted to continue except by approval of the dean when specific academic or professional reasons are involved.

College Breadth Requirements

The Executive Committee of The Marlan and Rosemary Bourns College of Engineering, in consultation with the faculty, is responsible for determining which courses may be used to satisfy these requirements.

Detailed requirements and lists of approved courses are available in the Office of Student Affairs.

Internships and independent study courses may not be used to satisfy breadth requirements.

For the following requirements, a course is defined as a block of instruction that carries credit of 4 or more units.

### Bourns College of Engineering

#### Breadth Requirement Unit Summary

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition</td>
<td>Varies</td>
</tr>
<tr>
<td>Humanities</td>
<td>12</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>12</td>
</tr>
<tr>
<td>Ethnicity (4 units)*</td>
<td>4</td>
</tr>
<tr>
<td>Natural Sciences and Mathematics</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td>44</td>
</tr>
</tbody>
</table>

*The 4-unit ethnicity requirement can be applied to the Humanities requirement, depending on content.

### English Composition

Students must demonstrate adequate proficiency in English Composition by completing a one-year sequence of college-level instruction in English Composition with an average grade of "C" or better and no grade lower than "C-". UCR's sequence is ENGL 001A, ENGL 001B, and ENGL 001C or ENGL 01SC. Transfer students who have credit for one semester of English Composition from another institution are required to take two additional quarters, i.e., ENGL 001B and ENGL 001C or ENGL 01SC. Students have the option of using a score of 3 on the College Board Advanced Placement Test in English to satisfy ENGL 001A; they must complete ENGL 001B and ENGL 001C or ENGL 01SC. Students with a score of 4 or 5 on the College Board Advanced Placement Test in English have satisfied ENGL 001A and ENGL 001B; they must complete ENGL 001C or ENGL 01SC.

Students with an overall GPA under "C" in the ENGL 001A, ENGL 001B, and ENGL 001C or ENGL 01SC sequence are required to repeat composition courses as necessary in order to meet the required "C" average minimum. It may be necessary to repeat one or more of ENGL 001A, ENGL 001B, and ENGL 001C or ENGL 01SC courses in which a grade of "C-" was earned in order to fulfill the three-quarter English Composition average of "C" or better. However, courses with a grade of "C-" cannot be repeated for credit to alter the transcript grade point average.

Students should enroll in an English composition course each quarter they are registered at UCR until the sequence of preliminary Basic Writing courses, if needed, and ENGL 001A, ENGL 001B, and ENGL 001C or ENGL 01SC is completed with a satisfactory GPA. A student may not receive baccalaureate credit for any work in English Composition taken prior to completing the Subject A requirement.

#### Humanities

1. One course in World History
2. One course in one of the areas of Fine Arts, Literature, Philosophy, or Religious Studies
3. One additional course chosen from
   a) History, Fine Arts, Literature, Philosophy, Religious Studies
   b) A foreign language at level 3 or above
   c) Humanities courses offered by Ethnic Studies, Creative Writing (courses in journalism), Humanities and Social Sciences, Latin American Studies, Linguistics, or Women's Studies

No course used to satisfy the English Composition requirement can be applied toward Humanities credit.

#### Social Sciences

1. One course from Economics or Political Science
2. One course from Anthropology, Psychology, or Sociology
3. One additional social science course offered by Ethnic Studies, Geography (cultural geography courses), Human Development, or Women's Studies, or one of the disciplines in (1) or (2) above.

To provide depth in satisfying breadth in the humanities and social sciences, at least two of the courses must be upper-division, and at least two courses, one of them upper-division, must be from the same subject area.

#### Ethnicity

1. One course dealing with general concepts and issues in the study of race and ethnicity in California and the United States. Courses that satisfy this requirement must concentrate on one or more of four principal minority groups (African American, Asian American, Chicano/Latino, and Native American). These courses must be comparative in nature, analyzing the minority group experience within the present and historical context of U.S.
other racial and ethnic groups, such as European-American minorities. The courses are to be offered by or cross-listed with the Department of Ethnic Studies.

Regardless of the student's college and major, the course may be counted toward the Humanities or the Social Sciences graduation requirements, depending upon the course's content as evaluated by the Committee on Educational Policy. Check with the Office of Student Affairs for the courses that fulfill the Ethnicity requirement.

**Natural Sciences and Mathematics**: 20 units
1. At least one course in biological sciences
2. At least one course in physical sciences
3. One course in mathematics or computer science or statistics. (No more than 4 units may be counted in mathematics, computer science, or statistics.) No course in cultural geography may be used.

All or part of this requirement is satisfied automatically by the lower-division course requirements in each major in The College.

**Major Requirements**
Detailed requirements for each major are found under the department listings in the Curricula and Courses section of this catalog, and are available from the Office of Student Affairs, (909) 787-5651. A GPA of at least 2.00 ("C") in upper-division courses taken in the major field is required for graduation. Not more than 9 units of courses in the 190-199 series may be counted in fulfilling the upper-division units needed for the major.

**College Policies and Procedures**
For detailed information on UCR policies and regulations see the Academic Regulations section of this catalog.

**College Regulations**
Detailed information and specifics with regard to the College Regulations governing undergraduate student status as approved by the faculty and contained in the Manual of the Riverside Division of the Academic Senate can be obtained from the Dean's Office.

**Student Responsibility**
Students are responsible for meeting deadline dates regarding enrollment, add/drop, change of grading basis, credit by examination, withdrawal, declaration of candidacy, and so forth. The dates are in the Schedule of Classes and must be observed. Advising can be obtained in The College Office of Student Affairs.

**Faculty Advisors**
Each student is assigned to a faculty member in the student's area of interest who serves as the faculty advisor. It is the responsibility of The College Office of Student Affairs to inform their students of assignment to an advisor.

All College of Engineering students are advised on a quarterly basis by either Student Affairs personnel or faculty advisors to assist them in their undergraduate careers. Faculty advisors are also mentors in students' areas of academic interest. Students, however, must be responsible for ensuring that they meet all requirements for graduation.

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**Course Enrollment**
In consultation with an advisor, every student is required each quarter to plan a detailed class schedule. Class schedules of fewer than 12 units must have the approval of the dean of The College.

Students who have not met the Subject A requirement are required to enroll in a Basic Writing or qualifier course during their first quarter of residency.

Up to the end of the third week of classes, students may, with the consent of the instructor and the approval of their advisor, add a course. Prior to the end of the fifth week of instruction, students may, with the approval of an advisor and after consultation with the instructor of the course, drop a course without penalty.

A student on probation may enroll for more than 13 quarter units only with the consent of the dean of The College.

With the approval of the Dean, students may withdraw from the University at any time prior to the end of instruction. Any changes in a student's class schedule not covered by the above regulations must have the approval of the dean.

**Enrollment on a Satisfactory/No Credit Basis**
A student in good standing may enroll and receive credit for courses graded "S." However, the S/NC grading system cannot be used for any course that is used to fulfill major or breadth requirements, except for any required course which is restricted to S/NC grading and up to 8 units of courses in the Humanities and Social Sciences. Exceptions to this policy may be granted, upon petition, by the student's advisor and the Executive Committee.

Students may change their grading basis in a course from letter grading to "S/NC" (or vice versa) up to the end of the eighth week of instruction.

Regulations governing the S/NC option are described under Credit and Grades in the Academic Regulations section of this catalog.

**Credit by Examination**
A student may petition for the privilege of examination for degree credit without formal enrollment in a particular course, but must be in residence and not on academic probation. Arrangements for examination for degree credit must be made with the student's advisor. Approvals of the advisor, the dean of The College, and the instructor who is agreeing to give the examination are necessary before the examination may be given. The results of all examinations for degree credit are entered on the student's record as if the student had actually taken the courses of instruction.

**Progress Toward the Degree**
At the close of each quarter, the courses, units, grades, and grade points earned are added to the student's cumulative university record. This record summarizes progress toward a degree. Lack of adequate progress may jeopardize continued registration. Students may access their advisory degree check electronically at any time (subject to computer system availability) as long as they are enrolled in a declared major in The College.

**Declaration of Candidacy**
Applications for graduation are available in The College Office of Student Affairs and must be filed by the deadline established for the quarter in which graduation is intended. The deadline for filing applications for graduation is printed in the Schedule of Classes for each quarter.

Applications are not accepted after the deadline established for the quarter. If for any reason a student does not meet the requirements for graduation after announcing candidacy, or if a student fails to meet the deadline for filing, an application must be filed for a subsequent quarter.
Graduate students at UCR are an essential part of the University’s distinguished research teams and full partners in the undergraduate teaching mission of the faculty. Founded as a research institution in 1907, Riverside is the oldest of the University of California’s southern campuses. UCR combines the intellectual and material resources of the UC system with a uniquely intimate research environment, fostering a type of frequent and high-powered faculty-student contact unavailable at other universities. Graduate degrees at UCR are research degrees, certifying that students are trained in the techniques of independent inquiry and have demonstrated the capacity to make unique contributions to their fields. Occupying a distinctive niche in disciplines ranging from chemistry to dance history, nematology to economics, UCR offers graduate programs leading to the degrees of doctor of philosophy, master of arts, master of science, and master of business administration.

ADMINISTRATION
Campus policies concerning graduate education are set by the Graduate Council, a committee of the Academic Senate, and carried out by the Graduate Division staff under the direction of the Graduate Dean. In addition, each program has a graduate advisor appointed by the Graduate Dean. Advisors assist students in program planning and completing degree requirements, approve official study lists, and write a yearly evaluation of each student’s progress toward the degree. Students should make an effort to confer regularly with their graduate advisor.

Graduate Student Association
All graduate students are members of the Graduate Student Association (GSA), which seeks to represent their views and promote their interests with the faculty and administration, both at the campus level and Universitywide. For a more detailed description of GSA activities and services, call (909) 787-3740. Further information can also be found under Graduate Student Association in the Student Services section of this catalog, or by e-mail to gsaucr@ucrac1.ucr.edu.

Application and Admission
The minimum requirement for admission to graduate status is the bachelor’s degree or its equivalent from an accredited institution.

Applying for Admission
Applicants may apply electronically at http://www.graddiv.ucr.edu. Paper applications for admission are available from departmental offices or the following:

Graduate Division
University of California, Riverside
Riverside, CA 92521-0208
(909) 787-3313; fax (909) 787-2238
grdadmis@pop.ucr.edu

In general, students who wish to be considered for fellowships, teaching or research assistantships, and other merit-based forms of support should contact departments directly. Since application deadlines for the fall quarter may vary somewhat, applicants should not hesitate to contact departments directly for additional information. Campuswide application deadlines for domestic students are September 1 for the winter quarter and December 1 for the spring quarter. A nonrefundable $40 application fee must accompany all applications. The following must also be submitted:

1. Two copies of official transcripts from each college or university attended since high school
2. Three letters of recommendation
3. Graduate Record Examination (GRE) general test scores

Some programs also require the appropriate GRE subject test. GRE scores are not required for the Education credential programs, and the MBA program requires the Graduate Management Admission Test (GMAT) in lieu of the GRE. Test scores should be no older than five years.
The admission process has as its prime objective the selection of those students most likely to complete their chosen graduate programs with distinction. After consultation between the program and the Graduate Division, the final authority to admit rests with the Graduate Dean.

Applicants are initially reviewed and rated based on their overall undergraduate and, where appropriate, postbaccalaureate GPAs. However, the evaluation process is intended to be flexible, and departments may take a variety of other factors into consideration, including GRE or other test scores, GPA in the major subject, letters of recommendation, and the reputation of the degree-granting program or institution.

Soon after the department forwards its recommendation to the Graduate Division, the applicant is notified in writing of the Dean’s decision. If admission is offered with work still in progress, official transcripts reflecting the satisfactory completion of this work and the awarding of the degree (where appropriate) must be submitted as soon as possible.

An offer of admission is valid for a specific quarter only. Accepted students who wish to be admitted for a subsequent quarter must reapply and, if additional course work has been completed, submit updated transcripts. Students are entitled to reapply once within one year without submitting a new application fee.

International Student Admissions

International students follow the same procedures and are governed by the same regulations as domestic applicants with the following important exceptions.

International applicants whose native language is not English must score a minimum of 550 on the written Test of English as a Foreign Language (TOEFL) and 213 on the computer-based version of the same exam. Applicants should arrange to take the examination in their home country by contacting the following:

Educational Testing Service
P.O. Box 6151
Princeton, NJ 08540-6151.

The date of this test may be no more than two years from the intended quarter of admission.

International students must also complete a financial statement (provided with the application packet) and return it with the application. The University will be unable to issue a Certificate of Eligibility (I-20 or IAP 66) without evidence of the applicant’s ability to pay all fees and expenses for the duration of the program of study.

Application deadlines for international students are February 1 for the fall quarter, July 1 for the winter quarter, and October 1 for the spring quarter.

The International Services Center specializes in providing information and a broad range of services to international students and can be contacted at (909) 787-4113.

Teaching Credential Programs

Prospective applicants to teaching credential programs should contact the Graduate School of Education, (909) 787-5225 for admission information and application materials or see Graduate School of Education later in this section of this catalog.

DEGREES AND PROGRAMS

UCR currently offers graduate programs leading to advanced degrees in the following areas:

**Ph.D. and M.A.** Anthropology, Classics, Comparative Literature, Dance History and Theory, Economics, Education, English, History, Mathematics, Philosophy, Physics, Political Science, Spanish

**Ph.D. and M.S.** Anthropology; Biochemistry and Molecular Biology; Biology, Botany; Cell, Molecular, and Developmental Biology; Chemical and Environmental Engineering; Chemistry; Computer Science; Electrical Engineering; Entomology; Environmental Sciences; Environmental Toxicology; Geological Sciences; Mathematics; Microbiology; Physics; Plant Pathology; Soil and Water Sciences

**Ph.D. only.** Biomedical Sciences, Botany (Plant Genetics), Dance History and Theory; Genetics, Neuroscience, Psychology, Sociology, Statistics (Applied)

**M.A. only.** Art History, History (Archival Management), History (Historic Preservation), History (Museum Curatorship), Music

**M.S. only.** Mathematics (Applied), Plant Science, Statistics

**M.B.A. only.** Management

The minimum requirements for master’s and doctor of philosophy degrees are outlined below. Academic departments and programs may impose further requirements, described in the Curricula and Courses section of this catalog. Additional information is available in brochures which can be obtained directly from departments and programs.

Foreign Language Requirement

Each program determines what, if any, knowledge of a foreign language or languages should be required of students pursuing graduate degrees. Proficiency in a foreign language may be demonstrated by: (1) passing a written examination administered by the department or program; or (2) successfully completing a course in the language at whatever level is specified by the program.

With the support of the program and the approval of the Graduate Dean, students may receive credit for foreign language examinations or course work completed not more than four years before being admitted to graduate study at UCR.

Standards of Scholarship

Only courses in which grades of “A,” “B,” “C,” or “S” are received may be counted toward satisfying graduate degree requirements. To continue in good standing and obtain an advanced degree, students must maintain a minimum GPA of 3.00. In addition, students must demonstrate acceptable progress toward their degree objectives. This entails the acceptable completion of all course work and other degree requirements in a timely fashion.

Students are considered to be making unacceptable progress and become subject to dismissal when

1. They have 12 or more units of “I” grades (incomplete course work) outstanding
2. The overall GPA falls below 3.00
3. The quarterly GPA falls below 3.00 for two consecutive quarters
4. They fail to fulfill program requirements such as examinations or research in a timely and satisfactory manner, or
5. They have not completed their programs within one year after reaching the normative time (discussed below).

Master’s Degree

The minimum academic residence in the University of California is three quarters, two of which must be spent at the Riverside campus.

Unless otherwise stated in the program description, the normative time required to complete the master’s degree is two years.

The master’s degree can generally be earned in one of two ways: by writing a thesis or by passing a comprehensive examination. Some programs offer only one of these options.
Both plans require a minimum of 36 quarter units of graduate or upper-division undergraduate work in the major subject or some other subject deemed relevant by the program faculty.

The **Thesis or Plan I Master's Degree** requires that at least 24 of the required units be in graduate-level courses taken at a campus of the University of California. Of these, only 12 may be in graduate research for the thesis (courses numbered 297 or 299). In addition to requiring an acceptable thesis, the department may require any examination that it feels necessary to confirm that the student has an appropriate knowledge of the discipline.

The **Comprehensive Examination or Plan II Master's Degree** requires that at least 18 units be in graduate-level courses taken at a University of California campus. None of these may be in courses numbered 297 or 299. Every candidate must take a comprehensive examination, the content of which is determined by the department or program.

Master's students in residence and in good standing may earn course credit by examination. Consult the departmental graduate advisor for further details.

**Advancement to Candidacy in Master's Program**

Students must file for advancement to candidacy no later than the third week of the quarter in which they expect to receive their degree, and their program may include work in progress at that time. The forms for advancement to candidacy are obtained from and filed in the Graduate Division after obtaining the graduate advisor's approval. In the event of some unexpected delay, students have up to one year from the completion date of all course requirements to complete their remaining academic requirements.

**Continuing from the Master's to the Doctorate**

Students who are enrolled in a master's program may petition to pursue the doctorate in their field of study. To do so, they should file a Form 1 with the Graduate Division while they are enrolled. Approval by the department is not automatic; the department will determine whether or not each student has the academic potential to succeed in its Ph.D. program. This requirement for evaluating each student's potential and academic fitness to proceed toward the Ph.D. is enforced regardless of what the student's initial degree objective was at matriculation.

**Doctoral Degree**

The minimum academic residence for the Ph.D. is six quarters in the University of California, three of which must be spent in continuous residence at UCR.

The normative time required for the Ph.D. varies considerably and is given at the end of each program’s description in the Curricula and Courses section of this catalog. For the doctoral degree, normative time is defined as the period of full-time registration required to earn the degree, assuming that the student enters with a bachelor’s degree and is assigned no course deficiencies or other remedial work. For most UCR programs, this falls between five and seven years.

The doctorate, the highest degree the university can bestow, is a research degree, conferred on the recommendation of a doctoral committee, which is nominated in consultation with the student by the program faculty and confirmed by the Graduate Dean.

Because the Ph.D. is a research degree, the University gives programs considerable latitude in establishing degree requirements. The individual student’s program of study is planned in consultation with the graduate advisor, who supervises the student’s progress prior to the appointment of the doctoral committee. A doctoral program generally involves two stages.

The first stage is spent fulfilling the requirements established by the program or department and the Graduate Council, typically a series of courses culminating in written and oral qualifying examinations. When these are passed, the student is advanced to candidacy for the Ph.D.

The second, or in-candidacy, stage, is devoted primarily to independent study and research and to the preparation of the dissertation. The doctoral dissertation must be an original work of research in the candidate’s chosen field of specialization. The doctoral committee determines the acceptability of the dissertation and may require that the student defend its contents in a final oral examination.

**SPECIAL PROGRAMS**

**Teaching Assistant Development Program**

UCR has a long history as a distinguished teaching campus and regards Teaching Assistant (TA) training as a crucial part of graduate instruction. The Teaching Assistant Development Program (TADP) sponsors activities designed to help TAs develop their teaching skills and to prepare them to be successful professors. Activities include a fall orientation program, pre-quarter and in-quarter workshops for new TAs, videotaping of classroom presentations and expert feedback, end-of-term student evaluations, and a mentor TA program, in which TAs of proven ability have the opportunity to mentor their less experienced colleagues.

**Intercampus Exchange**

The Intercampus Exchange Program (ICE) allows students to study for up to three quarters at another campus of the University of California. To be eligible, students must be in good standing with at least one quarter in residence at UCR and demonstrate at least one of the following: the need to take a course or courses not offered at UCR, the need to study with a particular individual, or the need for continuous access to library holdings or other facilities not available at UCR.

**Education Abroad**

The Education Abroad Program (EAP) provides students with the opportunity to study abroad at one of several study centers. To be eligible, students should have completed one year of graduate study, be making acceptable progress toward the degree, and know the language of the host country. Applications and information can be obtained from the International Services Center. Additional information can also be found in the Education Abroad Program sections of this catalog.

**FEES AND EXPENSES**

See Fees and Expenses under the Finances and Registration section of this catalog for a list of estimated expenses and a schedule of mandatory quarterly fees. Deadlines for paying fees are published quarterly in the **Schedule of Classes**.

Many graduate students appointed as Teaching Assistants or Graduate Student Researchers (GSRs) qualify for a partial remission of the Educational Fee. Nonresident tuition is paid for nonresident GSRs who are appointed 45 percent time for an academic term, are in a Ph.D. program, are not receiving any other form of support which pays the Nonresident Tuition, and who meet the eligibility requirements for the
FINANCIAL SUPPORT

Fellowships

Fellowships are awarded on the basis of scholarly achievement and promise. Students apply to their prospective programs which then nominate the most qualified applicants. Recipients must maintain a full-time program of study or research each quarter and maintain a GPA of 3.50 or better. Fellowships are offered only to full-time students pursuing degrees. Thus, credential and nondegree objective students are not eligible for fellowships.

Fellowship applications are considered once a year, in the winter quarter, and awards are made for the following academic year. Applications for admission that include requests for fellowships should be completed and submitted by January 5 (earlier when specified by the program).

Fellowship holders may supplement their awards in accordance with the prior approval of the Graduate Dean. Supplementation levels vary with the type and amount of fellowship award.

A Free Application for Federal Student Aid (FAFSA) or Renewal Application must be completed by all domestic graduate students who receive and accept any fellowship or grant from their department or from the Graduate Division. These awards are based on academic merit, but may be paid from a variety of funding sources, some of which require financial data. In order to use available resources to the maximum benefit of all graduate students, this information is required. It does not affect the amount of merit-based support awarded.

Teaching and Research Assistantships

Graduate students may be employed by the university on a part-time basis (not to exceed 50 percent time or 20 hours per week) during the academic year. Students who hold assistantships must register and complete a full program of study or research and remain in good standing for the duration of their employment. Students are responsible for reviewing their course enrollment to ensure that they are enrolled in at least 12 units.

For the academic year 2000-2001, 50 percent-time teaching assistantships provide a salary of $4,531 per quarter. TAs are appointed through their departments and must maintain a GPA of 3.25 or better and be making acceptable progress toward their degree.

For the 2000-2001 academic year, the salary for research assistantships at 49 percent-time ranges from $3,713 to $4,117 per quarter. Graduate Student Researchers (GSRs) can also be paid on a full-time basis for up to three months during the summer. To be appointed to and be retained as a GSR, students must maintain a GPA of 3.00 or better and be making acceptable progress toward the degree. GSR appointments are made through the department or program.

Need-Based Aid

All grant funding available to graduate students is administered through the Graduate Division. Students should contact their graduate department for more information. Federal Direct Stafford Loans and Federal Direct Unsubsidized Stafford Loans are available to graduate students through the Financial Aid Office. Contact the Financial Aid Office for a Free Application for Federal Student Aid if you want to be considered for these federal loan funds.

Research Grants

Dissertation Research Grants provide funds to doctoral candidates for research-related expenses associated with the dissertation. Applicants must be advanced to candidacy and plan to be registered during the period of the award. Proposals may be funded up to a maximum of $1,000. Applications are available in academic departments and the Graduate Division.

Humanities Graduate Student Research Grants provide funds to assist students doing original research or creative projects in the humanities or in interdisciplinary areas involving the humanities. Awards vary and are granted for a maximum of $1,500. Applications are available in academic departments and the Graduate Division.

The Intercampus Research Opportunity Fund assists with travel, living expenses, and the research costs of doctoral candidates whose research or study requires the use of another campus’ resources. Applicants must be advanced to candidacy. Applications are available in the Office of the Academic Senate.

Graduate Student Association Minigrants help to meet the financial needs of students who have been invited to present scholarly papers or posters at regional and national professional conferences. The program is administered by the Graduate Student Association and requires that departments agree to provide matching funds.
REGISTRATION, ENROLLMENT, AND TRANSFER OF CREDIT

Continuous Registration

Unless a leave of absence has been granted, students are expected to register for every academic quarter once their graduate studies begin. Students must either be registered or on Filing Fee status in the quarter in which the degree is actually awarded.

Filing Fee Status

Students who have completed all degree requirements except for filing their dissertations/theses or sitting for their master’s comprehensive examinations are eligible for Filing Fee status during the final quarter of residence. For students writing dissertations or theses, the student's committee must have read and approved a draft of the manuscript, with only minor revisions needing to be made.

Students on Filing Fee status pay only one-half of the Registration Fee. Because Filing Fee status is tied to the Registration Fee, it can vary from quarter to quarter. The amount is $120 in Fall 2000. Only one quarter on Filing Fee status is allowed, unless a student fails the master’s comprehensive exam. Then a retake of the exam on Filing Fee status is allowed. Students who fail to complete their degree programs must register and pay full fees for the following quarter.

Leave of Absence

A leave of absence is intended to allow the temporary interruption of the student’s academic program. Leaves are granted for the following reasons:

1. Serious illness or other temporary disability
2. The need to concentrate on a job or occupation not directly related to the degree program
3. Family responsibilities

To be eligible for a leave of absence, students must have the approval of their graduate advisors, be in good standing, and have been enrolled for at least one quarter. Leaves are not normally granted for more than one year.

Since students on leave do not pay fees, they may not use University facilities or make demands on faculty time. Students on leave are ineligible for fellowships, research grants, and financial aid. Appointment as a Graduate Student Researcher or Teaching Assistant, or any other appointment requiring full-time enrollment, is not possible. Nor can students on leave take qualifying examinations or receive credit for academic work done during the leave period.

In Absentia Registration

Students pursuing graduate study or research outside the state of California for an entire quarter may register in absentia and receive a 50 percent reduction in the Registration Fee. There is no reduction in the Educational Fee or other applicable fees. Refer to the Finances and Registration section of this catalog for a schedule of fees. In absentia registrants will normally be advanced to candidacy for the doctorate or be writing a master’s thesis.

Withdrawal

Students who withdraw — for whatever reason — during the first five weeks of a quarter are entitled to a partial refund of fees. The amount of the refund is determined by the number of calendar days elapsed between the first day of instruction and the date on which a withdrawal form is filed with the Graduate Division. See the Schedule of Refunds in the Finances and Registration section of this catalog. Students who have applied for the Deferred Payment Plan are considered registered students and are held to the same refund schedule.

Students who are unable to file the necessary paperwork due to illness or emergency should call the Graduate Division at (909) 787-3315.

Lapse of Candidacy

Candidacy for the degree may be lapsed after withdrawing or failing to register at the end of a leave of absence.

If three years or more have passed since advancement to candidacy for the Ph.D., candidacy status will be determined in consultation between the Graduate Dean and the department. If five years have elapsed between advancement to candidacy and readmission, candidacy will normally be withdrawn. In that case the student may be held for another set of written and/or oral qualifying examinations leading to advancement to candidacy. In addition, students will be responsible for all appropriate fees.

Enrollment

Each quarter, graduate students must pay their fees and enroll by the date indicated in the Schedule of Classes. Study lists require the prior approval of the departmental graduate advisor.

All graduate students are expected to carry a full academic course load unless good reasons exist for not doing so. Graduate students are considered to be full time if they are carrying 12 graduate units. When a course program contains both graduate and undergraduate courses, the following table is used to calculate the appropriate course load:

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Part-Time Study

In some programs, half-time study (6 units or fewer) is possible. Half-time status is only approved for students who cannot attend full-time for reasons of occupation (full-time employment outside the university), unusual family responsibilities, or poor health. Students should file petitions for half-time status with the Graduate Division.

Transfer of Credit

A maximum of 8 quarter units from institutions outside the University of California may be counted towards the master’s degree at UCR. All transfer work must have been completed in graduate standing with a mini-
Verification of having met subject matter proficiency either by completing the California Basic Educational Skills Test (CBEST). Students must also submit evidence of professional preparation that is age appropriate for their major other than professional education and must have passed the California Basic Educational Skills Test (CBEST).

Candidates for admission to credential programs must have completed a course work plan, be able to ask questions, and have an opportunity to petition the Graduate Division for credit once they are enrolled as graduate students.

Students may apply Summer Sessions course work from any UC campus toward their gradute degree requirements if they have the prior approval of their departments and of the Graduate Dean.

Units from another UC campus may be used to satisfy one of the three quarters of the residence requirement and may be counted for up to one-half of the total units required for the UCR master’s degree. Department and Graduate Division approval must be obtained before such units can be accepted for credit.

**GRADUATE SCHOOL OF EDUCATION**

Student Affairs:
1223 Sproul Hall
(909) 787-5990; fax (909) 787-3942
http://www.education.ucr.edu

**Degrees and Credentials**

The Graduate School of Education offers credential programs for students preparing for careers in elementary, middle school, and high school teaching; teaching in classrooms for individuals with mild/moderate or moderate/severe disabilities; and administrative service in public schools. Additional options provide special training to help prospective teachers work in culturally and linguistically diverse classrooms. The Graduate School of Education also offers M.A. and Ph.D. programs in Curriculum and Instruction, Special Education, Educational Administration, Educational Psychology, and Exceptionality/School Psychology.

Students planning to enter teaching credential programs should first obtain a general information packet available from the wall outside the Teacher Education Services Office, 1215 Sproul Hall, and become thoroughly familiar with its content. Students should then attend a Credential Information Seminar offered by the Teacher Education Services Office, 1215 Sproul Hall, preferably no later than the first quarter of their junior year. For further information, contact the Graduate School of Education, 1223 Sproul Hall, or call (909) 787-5990.

**Graduate Study**

Curricula are offered through the Graduate School of Education for the M.A. and Ph.D. degrees. These programs require broad training in education and in a cognate field of study. Further information can be found under Education in the Curricula and Courses section of this catalog.

**Teaching Credential Programs**

Students planning to become teachers can qualify at UCR for the following teaching and specialist credentials:

- Multiple Subjects (elementary)
- Single Subject (secondary)
- Education Specialist Instruction Credentials in Mild/Moderate and Moderate/Severe Disabilities

Internships are available in all the credential programs.

Students have the option of adding a Cross-cultural Language Academic Development (CLAD) Emphasis and/or a Bilingual Cross-cultural Language Academic Development (BCLAD) Emphasis in Spanish to their Multiple Subjects or Single Subject Credential. The BCLAD Emphasis in Spanish is currently available only in multiple subjects programs.

The CLAD emphasis educates candidates to deliver instruction in English in classrooms enrolling students of cultural and linguistic diversity. The BCLAD Emphasis in Spanish educates candidates to deliver instruction in Spanish, the student’s primary language.

Candidates for these credentials can complete the requirements for a preliminary credential within the B.A. program or can complete the requirements for a clear credential as a graduate student. The professional preparation program requires the equivalent of approximately one year of college work.

**Administrative Services Credential Programs**

The Graduate School of Education is authorized by the Commission on Teacher Certification to offer a program qualifying students for the Preliminary and Professional Administrative Services credentials.

Programs leading to these credentials are generally coordinated with an advanced degree in educational administration.

For further information, contact the Graduate School of Education, 1223 Sproul Hall, or call (909) 787-5990.

**THE A. GARY ANDERSON GRADUATE SCHOOL OF MANAGEMENT**

Student Affairs:
A. Gary Anderson Hall
(909) 787-4551; fax (909) 787-5994
http://www.agsm.ucr.edu

**Mission Statement**

The A. Gary Anderson Graduate School of Management (AGSM) is dedicated to the pursuit of excellence in substantive scholarly research.
enhancing the world’s base of knowledge about organizations, their environments, and their management, and to the transmission of this knowledge through quality educational programs to students, alumni, business managers, and the public.

**Master of Business Administration Program**

The AGSM offers a professional graduate program leading to the Master of Business Administration (MBA) degree. The MBA curriculum balances the art and science of management, with a particular emphasis on managing through information, and recognizes the global context of management. The first year core courses of the two-year MBA program provide a strong integrated foundation in the common body of knowledge for management. Thereafter, students take 28–36 units of electives, and complete a required internship, capstone course, and a thesis or case analysis.

The program is open to eligible students from all undergraduate majors. Qualitative methods is a prerequisite to the program. Qualified students who have not taken this prerequisite course may be admitted but must meet this requirement during their first two quarters in residence.

In addition to regularly scheduled course work during the day, sufficient sections of course work are offered in the evening to permit career professionals to pursue an MBA degree on a part-time basis.

**Admission**

Admission requirements for the program are similar to requirements for the Graduate Division. In addition to transcripts, applicants should submit test scores from the Graduate Management Admissions Test (GMAT) and three letters of recommendation from persons knowledgeable about the applicant’s academic and intellectual ability.

**Undergraduate Program in Business Administration**

The AGSM and the College of Humanities, Arts, and Social Sciences jointly offer an upper-division major in Business Administration intended for students who seek a professional education in the functional fields of private sector management. Students who elect the major are advised in the College of Humanities, Arts, and Social Sciences during their freshman and sophomore years; after admission to the major, students are advised by the AGSM. In addition to administering the program, the AGSM also teaches courses in the functional areas of management such as finance, accounting, human resources management, marketing, and management information systems. The B.S. degree in Business Administration is awarded by the College of Humanities, Arts, and Social Sciences.

**Certificate in Management**

This certificate is awarded jointly by the AGSM and UCR Extension. Satisfactory completion (with a grade of "B" or better) of six courses (plus prerequisite courses, if required) is necessary to earn the certificate. Certificate students complete five required core courses in Management and select one elective by arrangement with the AGSM.

Classes are taught by regular UCR faculty members and are scheduled on the UCR campus both during the day and in the evenings. Permission of the course instructor and the graduate advisor of the AGSM is required before final registration. Students may use the enrollment form inside the back cover of the Extension catalog to mail in their enrollment, or they may enroll in person at the Extension Office. For further information, write to the Coordinator of Certificate Programs, UCR Extension, Riverside, CA 92521-0112, or phone (909) 787-4112.

**Executive Education**

In addition to its MBA program, the AGSM offers four management training programs for executives, managers, administrators, and other professionals in private and public sectors. These programs seek to further the professional development of people in management by providing them with exposure to the most recent trends, ideas, and techniques in the field of management. None of these programs has formal educational prerequisites, since the AGSM is more interested in a candidate’s experience record and potential to benefit from the program.

- **Advanced Management Program (AMC) — September–November**
  
  This program is designed for individuals who have established their careers and who are interested in continuing progress. Typically, applicants are at the middle to senior level of management. Most will have three or more years of supervisory experience. The curriculum is designed around three core topics: dealing with people, working effectively with and within organizations, and understanding today’s business environment. Through exposure to these topics, managers also enhance their potential for career advancement.

- **Executive Management Program (EMP) — March–June**
  
  This program is designed for men and women who already head business organizations, functions, or administrative units. Participants in this program include middle and senior managers seeking the latest information on management processes; heads of functions who wish to develop a broader perspective of the total operation; technical managers moving into broader management responsibilities; and executives preparing for general management-level positions in either public or private sectors.

- **Focused Programs**
  
  The Advanced Management and Executive Management Programs provide an overview of major issues in the field of management. Focused programs, on the other hand, provide exposure to one area within the field of management. These programs are in depth and are designed for those who would like to develop extensive expertise in a subfield of management. The topics of the programs vary from year to year to meet the needs of the Inland Empire’s professional community.

- **Community Presentations Program**
  
  A fourth component of UCR’s Executive Education Program is the Community Presentation Series. This series of conferences is devoted to the examination of regional sociopolitical and economic conditions from the perspective of the management community. Currently, the Community Presentation Series includes conferences related to the region’s health care and real estate industries, as well as an annual economic forecast conference.
Numbering and Classification

The credit value of each course in quarter units is indicated for each term by a number in parentheses following the title. Departments may indicate the term in which they expect to offer the course by the use of: "F" (fall), "W" (winter), "S" (spring), "Summer." Three-quarter sequence courses may use the designation "Year" indicating that the sequence begins in the fall. The Schedule of Classes, published several weeks before each term commences, lists the courses that will actually be offered for that term, along with their class hours and locations.

The class type, such as lecture or laboratory and number of hours per week are listed in the first line of the description.

The letters "A," "B," "C," and "D" are used with the course numbers to indicate sequential order; they do not necessarily indicate that an earlier course in the sequence is a prerequisite to the later course(s); the prerequisites (if any) of a given course are stated in the description of that course. The letter designation "E-Z" immediately following a course number — for example, HIST 191 (E-Z) indicates different topics offered under a general title; no specific instance of such a course, for example, HIST 191E, HIST 191F, or HIST 191G, may be repeated for credit unless otherwise indicated in the course description. The letters "E" through "Z" have no sequential implications. The letters "H," "L," or "P" immediately following a course number usually have special designations: "H" for an honors course, "L" for a laboratory course (usually in the sciences), and "P" for a seminar. A grade is assigned by the instructor at the end of each term, and credit is granted for each term, except as otherwise noted.

Courses are numbered as follows:

1. Lower-division: 001-099; generally recommended for freshmen and sophomores.
2. Upper-division: 100-199; normally open only to students who have completed at least one lower-division course in the subject, or six quarters/four semesters of college work. Credit in special studies courses for undergraduates is limited to 5 units per quarter.
3. Graduate: 200-299; normally open only to graduate students or undergraduates who have completed at least 18 upper-division quarter units basic to the subject matter of the course.
4. Professional courses for teaching credential candidates: 300-399.
5. Other professional courses: 400-499.

Cross-listed courses

Cross-listed courses share equivalent course content but are taught by two or more departments. Cross-listed courses generally share a course number, but each course is tied to a specific subject area and department. While prerequisites, unit coverage, and grading basis are identical for cross-listed courses, it may be preferable for students in certain degree programs to enroll under only one of the available subject areas. See an academic advisor to determine which subject area is most appropriate before enrolling in a cross-listed course.

To determine which courses are cross-listed, see individual course descriptions in this catalog or see the quarterly Schedule of Classes.

University of California Extension Courses

Students may earn credit toward bachelor's and master's degrees at the University of California through University Extension. Acceptance of such credit is based on requirements of a particular college, division or department. Generally, preference is given to credits from courses numbered 001-099 and 100-199, prefixed by XR, XL, XI, XB, etc., indicating that such courses are intended to replicate regular offerings of a campus of the University of California. Also, courses organized by University Extension, numbered 001-099 and 100-199, prefixed only with an X, are acceptable.

Extension credits are treated like transfer units from approved colleges. They apply toward unit requirements for a degree, but they do not count toward the requirements for residence. Resident students in the University must have advance approval from the appropriate dean for enrollment in University of California Extension courses.

Credit earned in University Extension courses is not automatically applicable toward requirements for a master's degree or University-recommended teaching credential and is permitted only in unusual circumstances. Students desiring such credit should consult with their graduate advisors and the Graduate Division before undertaking such courses.

Beetles from the Entomology Department collection, prepared by David C. Hawkes, staff research associate.
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The Science Library, a state-of-the-art resource for students and faculty, opened in 1998.
ANTHROPOLOGY

Subject abbreviation: ANTH

Thomas Patterson, Ph.D., Chair
Department Office, 1334 W. Atkens Hall
(909) 787-5524
http://www.ucr.edu/CHSS/depts/anthro/home.htm

Professors
Eugene N. Anderson, Ph.D.
Wendy Ashmore, Ph.D.
Alan G. Fix, Ph.D.
Christine Ward Gailey, Ph.D. (Anthropology/Women’s Studies)
Michael Kearney, Ph.D.
David B. Kronenfeld, Ph.D.
Carl A. Taube, Ph.D.
R. E. Taylor, Jr., Ph.D.
Carlos G. Vélez-Ibáñez, Ph.D.
Philip J. Wilke, Ph.D.

Professors Emeriti
Alan R. Beals, Ph.D.
Sylvia M. Broadbent, Ph.D.
Paul H. Gelles, Ph.D.
Sally A. Ness, Ph.D. (Anthropology/Dance)

Associate Professors
Scott L. Fedick, Ph.D.
Martin Orans, Ph.D.

Subject abbreviation: ANTH

MAJORS
Anthropology is the study of the origin, the development, and the present characteristics of the peoples of the world. Findings concerning the nature of humanity are developed through the cooperation of specialists in four interdependent subdisciplines:

1. Archaeology, which recovers information concerning societies of the past
2. Biological anthropology, which deals with the evolution of the species and biological variation among living populations
3. Cultural and social anthropology, which studies human behavior in recent and modern societies
4. Linguistics, which studies human languages

The curriculum of the Anthropology Department reflects all four subdisciplines, but the major emphasizes here, as in the field in general, are primarily in cultural anthropology and secondarily in archaeology. Additional courses in linguistics are taught under the supervision of the Linguistics Committee.

Career Opportunities
A major in Anthropology, especially when taken in conjunction with appropriate courses in other disciplines, is useful in securing admission to a variety of graduate and professional schools in the humanities and social sciences and in the healing and helping professions. A major in anthropology can lead to interesting employment opportunities in museum work, archaeology, health and hospital work, administration, welfare, planning, scientific writing, and government. Anthropology is of special value to those who plan careers in government or business involving intercultural or international relationships. A major in Anthropology provides a perspective on the human condition that leads to flexibility and wisdom in handling a wide variety of human problems. The anthropology student's ability to observe situations and to write factual accounts is an asset to almost any career.

Degree Requirements

University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements
The Anthropology Department offers an undergraduate major leading either to the B.A. or B.S. degree in Anthropology. The Department also offers a major in Anthropology/Law and Society which leads to a B.A. degree. The B.S. program is intended for those planning professional careers in anthropology or in the related fields mentioned above. The B.A. programs are intended for those desiring a broad liberal arts curriculum.

Anthropology Major
The major requirements for the B.A. and B.S. degrees in Anthropology are as follows:

1. Lower-division requirements (12 units)
   a) ANTH 001, ANTH 002, and either ANTH 003 or ANTH 005
   b) LING 020
2. Upper-division requirements
   a) Thirty-six (36) units of upper-division Anthropology for the B.A.; 40 units for the B.S.
   b) At least one upper-division course in each of the subdisciplines of anthropology:
      (1) Archaeology
      (2) Biological anthropology
      (3) Cultural and social anthropology
      (4) Linguistics

Note: Students are strongly urged to take the lower-division requirements in the first two years of university study. Under exceptional circumstances, some of these requirements may be waived. Students lacking such preparation are urged to consult with their advisor. Students intending to major in anthropology should work closely with a faculty advisor in planning their programs.

Anthropology/Ethnic Studies Major
The major in Ethnic Studies/Anthropology is discontinued. Students currently working toward the B.A. degree in Ethnic Studies/Anthropology (as well as readmitted students and transfer students accepted prior to Fall 1999) will be allowed to complete the degree requirements but must graduate by June 2001. For a listing of degree requirements consult the 1996-97 UCR General Catalog.

Anthropology/Law and Society Major
The major requirements for the B.A. degree in Law and Society/Anthropology are as follows:

1. Requirements for Anthropology
   All requirements for the B.A. in Anthropology. See Anthropology major above for specific requirements.

2. Requirements for Law and Society (36 units)
   a) PHIL 007 or PHIL 007H
   b) LWSO 100
   c) One course chosen from the following list: ECON 111, PSYC 012, SOC 110A, POSC 114 (or equivalent course in research methods)
   d) Five courses chosen from the following list: ANTH 127, ECON 119, HISE 153, PHIL 183, POSC 167, SOC 159 (One of these courses may be replaced by a substitute choice from a list of courses published annually by the Law and Society Faculty Committee. Not more than two of the courses taken to meet this requirement [2.d] may be from the same department.)
   e) LWSO 193, Senior Seminar

In filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements (Anthropology requirements and Law and Society requirements).
Minor

The Department of Anthropology offers a minor in Anthropology which consists of 24 upper-division units and appropriate prerequisites as needed.

The courses are to be selected as follows:

1. Two upper-division courses (8 units) in cultural anthropology from ANTH 102, ANTH 122, ANTH 124, ANTH 125, ANTH 127, ANTH 131, ANTH 132, or ANTH 162. (ANTH 001 is the normal lower-division prerequisite for these courses.)

2. Two upper-division courses (8 units) from any one of the following subdisciplinary areas: These courses normally entail an appropriate lower-division course (4 units) in the given subdiscipline.
   a) Archaeology
      (1) Prerequisite: ANTH 003 or ANTH 005
      (2) Courses: ANTH 110, ANTH 111, ANTH 114A, ANTH 114B, or ANTH 117B
   b) Physical/Biological Anthropology
      (1) Prerequisite: ANTH 002
      (2) Courses: ANTH 107, ANTH 129, ANTH 146/PSYC 146, ANTH 150/HMDV 150, or ANTH 152
   c) Linguistic Anthropology
      (1) Prerequisite: LING 020
      (2) Courses: ANTH 120, ANTH 123, ANTH 165, or ANTH 167/LING 167, or ANTH 170/BPSC 170

3. One area course (4 units) from ANTH 115 (E-Z), ANTH 140 (E-Z), or ANTH 168/ETST 148/LNST 168

4. One methodological course (4 units) from ANTH 112, ANTH 116A, ANTH 157, ANTH 171, ANTH 175A, ANTH 175B, ANTH 183, ANTH 185A, or ANTH 185B

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Education Abroad Program

The Anthropology Department encourages eligible students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units towards graduation. Because strategy in choosing courses to be taken here and courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult the departmental Student Affairs Assistant for assistance. For further details see Education Abroad Program under International Services Center in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

GRADUATE PROGRAM

The graduate program is designed to provide each student with both basic knowledge of the subdisciplines of anthropology and specialized knowledge within one of the subdisciplines. In connection with seminars and research courses, students are expected to undertake the writing of serious research papers early in their graduate careers. Students should give copies of all completed research papers to the Graduate Secretary for placement in their file as soon as they are completed. Theses, together with other evidence of progress, are evaluated each year by the faculty, and the student is informed in writing of their conclusions. Students are expected to select faculty advisors, subject to approval by the chosen advisor, early in their graduate careers and to work closely with them in planning their programs. Students are free to select new advisors if their interests shift.

Subdisciplinary Requirement. Because the important theoretical concepts of the discipline are dependent upon findings arising in each of the major subdisciplines, students are expected to acquire a basic understanding of three of the four subdisciplines (cultural anthropology, biological anthropology, archaeology, and linguistics) early in their graduate careers. One of these three subdisciplines will later become the basis of further specialization.

Upon entrance, each student meets with a diagnostic committee consisting of three faculty members who review the previous training, accomplishments, and research interests of the student. The committee makes recommendations concerning the selection of a faculty advisor (if not yet selected by the student), makes initial suggestions concerning the development of the student's area of research interest, and discusses various means of preparing for the Comprehensive Master's Level Examination. Specific course work and other means of preparation for the Master's examination is assigned in consultation with the student's advisor.

Typically, with the consent of the faculty advisor, a student will complete at least 24 units of graduate work as follows: four courses totaling at least 12 units in the student's major area of specialization, two courses totaling at least four units in the area of the student's major subdisciplinary concentration, and an additional three courses totaling at least 12 units in the student's area of research interest. The student is required to pass the written portion of the Comprehensive Master's Level Examination within the first two years of full-time enrollment in the graduate program. In addition, each student must demonstrate basic proficiency in a language other than English. A student may petition to waive this requirement if they have sufficient knowledge and proficiency.

Language Requirement. For the Ph.D. degree, the normal expectation is that a student be required to demonstrate at least a reading knowledge in one language other than English. In some cases, a knowledge of two languages is required. No later than the end of the second quarter of graduate status, each student is required to file a Statement of Plan to Fulfill the Language Requirement for the Ph.D. in Anthropology. Competency may be demonstrated by:

1. Placing higher than level 3 in the Language Placement Examination,
2. Receiving a grade of at least "B" in a reading course or level 3 traditional language course, or
3. Obtaining alternative certification in cases where a language examination or course is not available at UCR.

The choice of languages and the method of demonstrating competency is to be determined in consultation with the student's advisor. Competency must be demonstrated before advancement to candidacy. Failure to meet the language requirement results in a delay of advancement to candidacy. Because language acquisition is a slow process, students are encouraged to begin language training early in their graduate program. Under unusual circumstances, in consultation with their advisor, students may petition to waive the language requirement using the form noted above. A justification for granting such an exception needs to be stated in terms of how the acquisition of another skill would significantly advance the academic preparation of the student and why knowledge of a language other than English would not. Any such petition is considered by the whole faculty. Students who plan to conduct fieldwork in a non-English setting are expected, in addition, to acquire conversational skills in the appropriate language before commencing fieldwork. Students may at any time, file an amended Statement of Plan to Fulfill the Language Requirement for the Ph.D. in Anthropology if, in consultation with their advisor, their academic plans are, for good cause modified.

A written Master's Level Examination is required of all students (including those holding M.A. degrees) to demonstrate proficiency in their primary subdisciplinary specialty, i.e., cultural anthropology, archaeology, biological anthropology, or linguistics. In addition, all graduate students are required to take and successfully pass at least two courses in each of two subdisciplines other than their primary
subdiscipline. For students not specializing in cultural anthropology, one of the subdisciplines selected must be cultural anthropology. It is preferable, when students have sufficient preparation, that at least one of the courses taken in each subdiscipline be a graduate seminar. The Master’s Level Examination must be taken no later than the fall quarter at the beginning of the student’s third year in the Ph.D. program. A postponement can be obtained only by formal petition which is considered by the faculty as a whole. Based on the student’s performance on the test, the faculty would recommend the following.

1. **Pass with Distinction or High Pass.**
   Automatic continuation in the Ph.D. program and award of the master’s degree under Graduate Division Plan II.

2. **Pass.**
   Award the master’s degree under Graduate Division Plan II but require a successful retake (Pass with Distinction or High Pass) of the exam to continue in the Ph.D. program.

3. **Fail.**
   No master’s degree awarded, but allow one retake of the exam within six months to potentially receive the master’s degree under Graduate Division Plan II.

Graduate Division Plan II master’s degree requires a minimum of 36 quarter units with at least 18 units of 200-level courses and other requirements which are stated in the Graduate Studies section of this catalog which should be consulted.

The Master’s Level Examination is six hours in length, given in two three-hour segments. The date of the examination will be announced at the end of the spring quarter of the previous academic year to permit students to plan their fall schedule. Students planning to take the examination should notify the Departmental Graduate Advisor in writing, within one week of the spring quarter announcement of the examination date, of their intention to take the examination.

**Specialty Requirement.** Not later than the spring quarter of the second year of graduate study, students should submit to their advisor a comprehensive program of study covering the remainder of their graduate career. This program of study should explain how they intend to develop and pursue their particular area of specialization. Normally, the program of specialized study should allow from five to seven years from the time of entering the program to the time of receiving the Ph.D. The comprehensive program of study must be approved by the department faculty after a thorough review of the student’s progress to date and careful consideration of the likelihood that the student would be able to complete the proposed program of study. As early as possible, a Ph.D. dissertation committee should be formed to join with the advisor in preparing and evaluating training in the area of specialization. Members of the dissertation committee must be approved by the department faculty. The program of study should be modified from time to time to take advantage of new course offerings or to accommodate shifts in interest. Such modifications should be made in writing, approved by the advisor, and included in the student’s file. The program of specialized study should include knowledge of methodology, an understanding of the history and development of the field, a grasp of important theoretical problems, and where relevant, knowledge of a particular geographical or cultural area. Where research interests require knowledge of a foreign language, special skills in a related discipline, or special training in methodology, means of satisfying these additional requirements should be worked out with the advisor and the dissertation committee.

If more than five years are required to carry out coursework or to complete special training, the additional time requirement should be justified in the program of study.

**Dissertation Proposal.** As soon as the Master’s Level Comprehensive Examination is satisfactorily completed, the student should begin preparation of a detailed proposal for dissertation research, in consultation with the student’s advisor and Ph.D. dissertation committee. The proposal serves to prepare the student to undertake dissertation research and also provides the basis for the Ph.D. Oral Qualifying Examination.

**Written Qualifying Comprehensive Examination.** The Written Qualifying Comprehensive Examination takes the form of a publishable research paper that must be completed by the student and accepted by the department before the student is advanced to Ph.D. candidacy. The student (in consultation with the advisor and dissertation committee) poses a research problem to be addressed in the paper. The proposed question must be approved by the department.

Upon completion of the paper to the satisfaction of the student’s advisor and dissertation committee, the document must be approved by the department following established procedures. Acceptance of the paper by the department constitutes a satisfactory pass of the Written Qualifying Comprehensive Examination. If the paper is unsatisfactory to the department, one rewrite may be submitted to the faculty for re-evaluation within 10 weeks of the initial department review.

**Department Oral Presentation.** Every student, upon successful completion of the Written Qualifying Comprehensive Examination, shall present orally some finding within the specialty to the faculty and students; the presentation should be oriented to anthropology as a whole and not merely to specialists. This performance is not graded or judged on a pass-fail basis, but is intended to provide the student with experience in presenting research papers in a public context.

**Oral Ph.D. Qualifying Examination.** The Oral Qualifying Examination usually involves a demonstration of general competence in anthropology combined with extended discussion of the proposed dissertation research.

**Advancement to Candidacy.** Once a student has satisfactorily fulfilled the requirements of the Dissertation Proposal, Written Qualifying Comprehensive Examination, Department Oral Presentation, Language Requirement, and Oral Ph.D. Examination, the student is advanced to candidacy for the Ph.D. and formally begins research for the dissertation.

**Dissertation.** After advancement to candidacy, the student is expected to complete a Ph.D. dissertation representing original research within the field of specialization. Ph.D. dissertations generally require a year of field research followed by an additional year of data analysis and write-up. After completing the dissertation or a substantial portion of it, the student must present a defense of the dissertation in accordance with University requirements.

**Master’s Degree**

The M.A. degree is awarded under Graduate Division Plan II. Candidates for the M.A. degree must complete the Basic Requirement and pass a written comprehensive examination prepared by a departmental committee.

**Master of Arts in Anthropology and Education**

The M.A. is offered in cooperation with the Graduate School of Education; see the listing under Education or inquire at either office for further information.

**Master of Science Degree**

The M.S. degree is awarded under Graduate Division Plan I. Candidates for the M.S. degree must complete 36 units, at least 24 in the 200-series courses; courses for the area of specialization as specified by the department; and an acceptable thesis.

**University Requirements**

General requirements of the University, such as residence and unit requirements, are found in the Graduate Studies section of this catalog.

General requirements for admission to the University can be found in that section as well. These include a requirement that domestic applicants supply Graduate Record
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Examination General Test scores (verbal, quantitative, and analytical) scores before they can be admitted.

LOWER-DIVISION COURSES

ANTH 001. Cultural Anthropology. (4)
Lecture, three hours; discussion, one hour. Basic contributions of anthropology to the understanding of human behavior and culture and the explanation of similarities and differences among human societies. The relevance of materials drawn from tribal and peasant culture to problems of the modern world. Discussion sections stress the application of anthropological methods to research problems. Credit is awarded for only one of ANTH 001 or ANTH 001H.

ANTH 001H. Honors Cultural Anthropology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ANTH 001. Basic contributions of anthropology to the understanding of human behavior and culture and to the explanation of similarities and differences among human societies. The relevance of materials drawn from tribal and peasant cultures to problems of the modern world. Discussion sections stress the application of anthropological methods to research problems. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ANTH 001 or ANTH 001H.

ANTH 002. Biological Anthropology. (4)
Lecture, three hours; discussion, one hour. A survey of past and contemporary human variation and evolution considered from the perspective of the fossil record, inferences from nonhuman primate biology and social behavior, and the forces of evolution. Credit is awarded for only one of ANTH 002 or ANTH 002H.

ANTH 002H. Honors Biological Anthropology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ANTH 002. A survey of past and contemporary human variation and evolution considered from the perspective of the fossil record, inferences from nonhuman primate biology and social behavior, and the forces of evolution. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ANTH 002 or ANTH 002H.

ANTH 003. World Prehistory. (4)
Lecture, three hours; discussion, one hour. An examination of the more than three million year culture history of genus Homo and biological antecedents from the beginning of tool-using behavior in the Old World to the rise of complex social and political systems (civilizations) in both the Old and New World.

ANTH 004. World Civilizations. (4)
Lecture, three hours; consultation, one hour. A survey of archaeological, anthropological, and historical perspectives relating to the study of nature, origins, and development of civilizations in both the Old and New World. The history and culture of ancient Mesopotamia, Egypt, Mesoamerica (Mexico), and Peru will be emphasized.

ANTH 005. Introduction to Archaeology. (4)
Lecture, three hours; discussion, one hour. A general introduction to the aims and methods of archaeology in the field and in the laboratory. World prehistory as revealed by these methods will be briefly surveyed.

ANTH 006. Introduction to World Music. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. A survey of music, musical instruments, and manufacturing. Includes listening to music from many cultural contexts. Also covers a variety of scholarly topics in world music. Cross-listed with MUS 006.

ANTH 009. Native American Art. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): none. This course is a comparative introduction to the material culture and art of Native North America. It will investigate architecture, dress, sculpture and other material objects in the context of divergent pre-Columbian and modern aesthetics and belief systems. Cross-listed with AHS 009.

ANTH 010. Mysteries of the Ancient Maya. (4)
Lecture, three hours; outside research, three hours. An introduction to all aspects of the ancient Maya civilization of southern Mexico and Central America. The course will explore Maya origins, political organization, agriculture, art, religion, architecture, hieroglyphic writing, and the unexplained collapse of the civilization.

ANTH 020. Culture, Health and Healing. (4)
Lecture, three hours; consultation, one hour. Survey of health, illness, curing and nutrition in cross-cultural perspective. Ways in which different cultural groups conceive of disease, health maintenance and healing, how traditional beliefs about health and nutrition arise; what we can and cannot learn from traditional health-seeking practices.

ANTH 027. Art of Pre-Columbian America. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): none. A survey course intended to provide an up-to-date background to the ancient art of Mexico, Central America, and the Andean region of western South America. The various peoples and art of pre-Columbian America are discussed according to the three broad cultural regions of Mesoamerica, the Intermediate Area (lower Central America and southwestern South America), and the Andean area. Lectures are illustrated with slides of particular sites and important examples of pre-Columbian art. Cross-listed with AHS 027.

ANTH 030. People, Plants, and Animals. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): none. An introduction to anthropological investigations of human uses of biotic resources. The course focuses on management: worldwide comparisons of strategies for domesticating, using, and conserving plants and animals; and worldwide search for better and more sustainable strategies.

UPPER-DIVISION COURSES

ANTH 102. Anthropology of Art. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper division standing or consent of instructor. Anthropological approaches to the study of art in traditional non-Western societies. Through specific readings and case studies from four geographic regions (North America, Southeast Asia, Oceania, and West Africa), the dynamic role of art in traditional societies is illustrated. Cross-listed with AHS 102.

ANTH 103. Introduction to Visual Anthropology. (4)
Seminar, three hours; outside research and projects, three hours. Prerequisite(s): ANTH 001 or ANTH 001H or consent of instructor. An introduction to the rapidly growing field of visual anthropology. Examines the similarities and differences between ethnographic film, critical studies, and written ethnographies. Explores the politics of representing other cultures visually. Cross-listed with FVC 103.

ANTH 104. Human Social Organization. (4)
Lecture, three hours; individual consultation as needed, one hour. An introduction to the study of families, classes, classes, classes, bureaucracies, factions, parties and other forms of human organization. Various aspects of recruitment, social control, communication, social ranking, exchange and conflict are discussed.

ANTH 105. Organizations as Cultural Systems. (4)
Lecture, three hours; outside reading and written exercises, three hours. The role of culture in the formation and management of complex bureaucratic organizations. Covers types of organizations and organizational cultures, the impact of the cultural environment, and problems posed by rapid cultural change. Cross-listed with BSAD 105.

ANTH 106. Psychological Anthropology (4)
Lecture, three hours; individual consultation, one hour. Research and theory concerning the relationships of culture and personality, psychological similarities and differences in cross-cultural perspective, culturally standardized cognitive systems; why anthropologists are interested in psychological theory.

ANTH 107. Evolution of the Capacity for Culture. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): ANTH 001 or ANTH 001H or ANTH 002 or ANTH 002H or ANTH 003 or relevant preparation in psychology or biology or consent of instructor. An examination of the evolution of the biological and social capacities which have made culture the central attribute of the human species. Topics include the evolution of human diet, tool-making, the family and kinship, and language.

ANTH 109. Women, Politics, and Social Movements: Global Perspectives. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper division standing or consent of instructor. Introduction to “Third World” women’s politics. Covers women’s politics from a global perspective. Although international in breadth, emphasis is placed on South Asia, sub-Saharan Africa, and the Caribbean. Cross-listed with WST 109, fulfilling either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ANTH 110. Prehistoric Agriculture. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. A cross-cultural perspective on prehistoric agriculture as resource management, economic system, and political tool. Archaeological methods and theory of reconstructing agricultural systems and their role in prehistoric societies.

ANTH 111. Peopling of the New World. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Consideration of the archaeological, biological, linguistic, and dating evidence documenting the nature and timing of the earliest occupation of the Western Hemisphere by human populations.

ANTH 112. Settlement Patterns and Locational Analysis. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. An archaeological perspective on spatial behavior from architectural design to regional economic sys-
Curricula and Courses

ANTH 114A. Lithic Technology I. (4)
Lecture, three hours; laboratory, four hours. Prerequisite(s): consent of instructor and either ANTH 003 or ANTH 005. Introduction to the technology of core-and-flake stone tools. Principles of fracture, quarrying, reduction, heat treatment, core technology, and production and use of flaked stone tools in core-and-flake lithic assemblages. Assemble formation processes and their interpretation.

ANTH 114B. Lithic Technology II. (4)
Lecture, three hours; laboratory, four hours. Prerequisite(s): ANTH 114A and consent of instructor. The technology of core-and-flake industries, ground-stone industries, and millstone industries. Percussion- and pressure-flake reduction sequences and strategies, emphasizing quarrying, initial reduction, core production, blade production, and production and use of tools from blades. Technology and production of ground-stone tools, and the quarrying of raw material and production of millstones. Assemble formation processes and their interpretation.

ANTH 115 (E-Z). Archaeological Interpretations. (4)
For hours and prerequisites, see segment descriptions. Study of the prehistory of different regions of the world. Emphasis on the method and theory underlying archaeological investigations of the nature of man and culture and the course of human development.

ANTH 115E. North American Prehistory. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. An introduction to the archaeological record of North America from initial peopling of the continent to the historic period.

ANTH 115M. Prehistory of California. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. A survey of prehistoric cultures of California from the earliest settlement to the historic period.

ANTH 115Q. Great Basin Culture History. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ANTH 003 or ANTH 005 and either upper-division standing or consent of instructor. Prehistory and ethnography of the Great Basin. Topics include the earliest dated archaeological lifto-stage manifestations, regional and temporal expressions of the Western Archaic, Formative Anasazi and Fremont developments, and the Numic peoples. Emphasis will be on technology and cultural ecology.

ANTH 115R. Archaeology of Eastern Mesoamerica. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. An introduction to Maya archaeology intended to provide an overview of ancient Maya cultural history from the Formative period to the time of Spanish contact. During the course, particular Maya sites will be described in detail.

ANTH 115S. Archaeology of Western Mesoamerica. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. An introduction to the archaeology and culture history in the New World nuclear area of Western Mesoamerica from the occupation of this area before 10,000 years ago to the arrival of Spanish Europeans in A.D. 1519.

ANTH 115T. Prehistory of the Southwest. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. A survey of prehistoric cultures of the American Southwest from earliest settlement to the historic period.

ANTH 115U. Andean Prehistory. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. A description of Andean culture history, emphasizing Peru, from the earliest documentation of human occupation to the Spanish conquest of the Inca. Topics include origins of food production, early ceremonial architecture, Paracas textiles, the Nasca lines, Moche iconography and ritual, and Inca architecture. Discussion of major sites and their architecture, ceramics, sculpture, and other archaeological remains.

ANTH 116A. Dating Methods in Archaeology and Paleoanthropology. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. An introduction to dating methods used in archaeology and paleoanthropology.

ANTH 116B. Analytical Methods in Archaeology. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. Application of evolutionary ecological theory to studies of other symbolic and social fields, the analysis of semantic systems, and the use of linguistic techniques for prehistory.

ANTH 117A. Linguistic Anthropology. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): ANTH 001 or ANTH 001H or consent of instructor. An introduction to the arts with emphasis on folk and traditional forms. Oral and written literature will be featured, but theories of musical, visual, and other arts will be discussed.

ANTH 117B. Political Anthropology. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ANTH 001 or ANTH 001H or consent of instructor. An introduction to theories of social organization through consideration of relationships among kin.

ANTH 117C. Anthropological Theories of the Arts. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): ANTH 001 or ANTH 001H or consent of instructor. Application of evolutionary ecological theory to the understanding of human social behavior and culture. Topics include foraging strategies and habitat use and cooperation and competition concerning resources in social groups.

ANTH 117D. Cross-Cultural Perspectives on Dance. (4)
Lecture, two hours; discussion, one hour; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Course will survey anthropological writings on dance traditions found around the world. With a view to understanding dance from a global perspective.
topics covered include dance as an expression of social organization and social change, dance as religious experience, and dance as play/sport. Cross-listed with DANCE 130.

**ANTH 131. Applied Anthropology. (4)**
Lecture, three hours, extra reading, three hours. Prerequisite(s): ANTH 001 or ANTH 001H or consent of instructor. Applies anthropology to current issues such as community development, education, health, public administration, and conflict.

**ANTH 132. Cultural Ecology. (4)**
Lecture, three hours. Man's relationships to his total environment; strategies for managing the environment and its resources, effects of environment on culture and society; impact of human management on the ecosystem, and ways in which human groups view their surroundings.

**ANTH 133. Women in Cross-cultural Perspective. (4)**
Lecture, three hours; discussion, one hour. Concerns women at all times and places. Biological, economic, and ideological influences upon women will be discussed with reference to traditional sex roles, sexual stratification, and women's contributions to the origin and development of human culture.

**ANTH 134. Anthropology of Resource Management. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): ANTH 001 or ANTH 001H or consent of instructor. Anthropological approaches to the study of resource use and management in cross-cultural perspective. Issues include conservation, development, sustainability, and common property management. Special attention is paid to management of plant and animal resources in foraging, farming, and fishing societies.

**ANTH 135. Nutritional Anthropology. (4)**
Lecture, three hours; consultation, one hour. Food and nutrition in culture; world problems of malnutrition and nutritional improvement and how anthropology can contribute to their solution; explanations of cultural foodways, development and change of human eating patterns.

**ANTH 140 (E-Z). Ethnographic Interpretations. (4)**
For hours and prerequisites, see segment descriptions. Study of peoples and cultures in particular areas of the world. Emphasis is placed on ethnological and theoretical problems as these are revealed in the examination of the history, coherent sociocultural patterns, and ecology of specific aboriginal populations and contemporary groups.

**ANTH 140E. Ethnology of the Greater Southwest. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the many varied native cultures of the Greater Southwest. Major differences as well as similarities in the forms of language, social organization, religion, and material culture occurring in the Greater Southwest will be defined and described. The peoples of the Greater Southwest are considered, not only in terms of the ethnographic present, but also through a diachronic perspective, from the prehistoric past through the Spanish colonial era to the present.

**ANTH 140F. California Indian Peoples. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): upper-division standing or consent of instructor. A survey of the life-ways of Indian peoples of California at the time of Euro-American contact, the history and effects of contact, and contemporary conditions.

**ANTH 140G. Anthropological Perspectives in Africa. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. A number of African cultures are carefully examined in terms of three or four anthropological topics, such as: subsistence patterns, social organization, and religious systems. The treatment of these cultures follows a brief overview of the geography, history, and linguistic patterns of Africa.

**ANTH 140H. Cultures of Southeast Asia. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): ANTH 001 or ANTH 001H or equivalent. Anthropological interpretations of culture and society in Southeast Asia, including Indonesia; topics include prehistoric, ethnic groups, social organization and structure, human ecology, folk and high culture, etc.

**ANTH 140I. The Andes, Past and Present. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Provides an overview of Andean society, past and present. Examines the colonial matrix in which Iberian and Andean social, political, and cultural forms came together. Uses ethnographics, indigenous narratives, and film about contemporary Andean society to address issues of class, ethnicity, gender, and the politics of representation.

**ANTH 140J. An Anthropology of Mexicans of the Southwest United States. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the impact of human management on the ecosystem, and ways in which human groups view their surroundings.

**ANTH 140K. The Peoples of Mexico in Historical and Global Perspective. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the cultures and societies of Mexico in historical and global perspective. Emphasis on agrarian communities and the contributions of Mesoenamic ethnicity to general anthropological theory.

**ANTH 140L. Agriculture and Rural Society in Mexico: Past and Present. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. A consideration of human evolution from the lower primates as evidenced by the fossil record; the morphology, ecology, and culture of fossil humans in the light of the synthetic theory of evolution.

**ANTH 145. Human Paleontology. (4)**
Lecture, three hours; discussion, one hour; outside research, three hours. Prerequisite(s): consent of instructor. An in-depth study of the human skeleton, including bone biology, functional morphology, fragment identification, reconstruction, forensic methods, and curation techniques. Useful for anthropologists and those intending careers in medical, physical therapy, and forensics.

**ANTH 155. Methods in Biological Anthropology. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): ANTH 002 or ANTH 002H; relevant preparation in the life sciences; or consent of instructor. The methods of classical and population genetics applied to the understanding of evolution and variation in contemporary human populations. Cross-listed with HMID 150.

**ANTH 156. Primate Social Behavior. (4)**
Lecture, three hours, extra reading, three hours. Prerequisite(s): ANTH 002 or ANTH 002H; relevant preparation in the life sciences; or consent of instructor. The methods of classical and population genetics applied to the understanding of evolution and variation in contemporary human populations. Cross-listed with HMID 150.
instructor. Reviews the historical processes and regional circumstances that have given rise to the relations between indigenous peoples and Latin American states. Studies concepts of nationalism, ethnicity, and the state in the context of indigenous efforts to resist assimilation and to gain limited autonomy. Comparisons are made with the problems and prospects of multilingual societies worldwide.

ANTH 162. Culture and Medicine. (4)
Lecture, three hours; consultation, one hour. Interrelations of health, disease and culture; cross-cultural comparisons of health, "disease" and "curing" concepts; effects of cultural behavior on health and illness. Special focus on traditional societies and their belief systems, and on the effects of cultural change (historical and modern) on illness and curing.

ANTH 163. Transnational and Global Communities. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. A critical survey of recent anthropological and theoretical work concerning transnational and global sociocultural processes. Special emphasis on transnational, diasporic, and other unbound communities; borderlands; and the impact of global media and communication and transnational migration on community and identity.

ANTH 164. Gender and Development in Latin America. (4)
Seminar; three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Discusses the role and contribution of Latin American and Caribbean women within their societies. The effects of national economic development policies upon their status and their participation in and integration into the policy-making process are emphasized. Cross-listed with LNST 164 and WNST 164.

ANTH 165. Cognitive Anthropology. (4)
Lecture, three hours; individual consultation, one hour. The structure of the knowledge of cultural domains; systems of knowledge in different cultures examined in the light of theories of how people learn them, store them, and use them.

ANTH 167. Structural/Descriptive Linguistics. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): LNG 020 or consent of instructor. An overview, from the original sources, of the contribution of major figures and schools in linguistics from Saussure through early Chomsky. Cross-listed with LNG 167.

ANTH 168. Caribbean Culture and Society. (4)
Seminar; three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of the Caribbean region from a historical, cultural, and political perspective. Emphasis on contemporary issues affecting the Caribbean, and the struggle of its people to maintain their identities. Cross-listed with ETST 148 and LNST 168. T Torres

ANTH 170. Ethnobotany. (4)
Lecture, two hours; seminar, one hour; discussion, one hour. Prerequisite(s): BIOL 104/BPSC 104, or consent of instructor. Introduces students to ethnobotanical research by reviewing selected ethnobotanical studies. Topics covered by lectures include fundamental principles of ethnobotany, the search for new medicines and other products made from plants, the role of humans in plant evolution, and the impact of plants on human cultures. Discussions focus on the past and present role of humans in plant conservation of "heath," "disease," and "curing" concepts, and sustainable management practices in agriculture and forestry. Seminars by invited guests and enrolled students present selected topics in ethnobotany. Cross-listed with BPSC 170.

ANTH 171. Field Course in Maya Archaeology. (4-12)
Lecture, two hours; laboratory, three to six hours. Prerequisite(s): either ANTH 003 or ANTH 005 and consent of instructor. Archaeological survey and excavation, including training in site mapping, use of satellite-based Global Positioning Systems, natural resources surveying, and field laboratory techniques.

ANTH 175A. Anthropological Research: Basic Techniques. (4)
Lecture, three hours; consultation, one hour. Includes basic data gathering procedures in anthropological field work such as censuses, maps, surveys and genealogies.

ANTH 175B. Anthropological Research: Specialized Techniques. (4)
Lecture, three hours. Includes ethnographic field techniques such as the aggregation of open-ended data, frame elicitation, componential analysis, collection of quantitative data, behavioral observation, and social-cultural inferences from geographical and spatial distributions.

ANTH 175C. Anthropological Research: Data Presentation. (4)
Lecture, three hours. Includes problems in the collection, analysis, and presentation of data such as strategy and rapport in field work, ethics of field research, theory construction, research problems, bibliographic technique, preparation of research proposals, final data analysis, and the writing of research papers and dissertations.

ANTH 176. Music Cultures of Southeast Asia. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in the Philippines, Indonesia, Malaysia, Thailand, Myanmar (Burma), Laos, Cambodia, and Vietnam. Designed for the student interested in the performing arts and cultures of mainland and insular Southeast Asia. No Western music background is required. Cross-listed with AST 127, DNCE 127, ETST 172, and MUS 127.

ANTH 177. Music and Gender in Cross-Cultural Perspectives. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of gendered performance genres from a number of cultures. Seeks to familiarize the student with gender-specific music and notions of gender that are often constructed, maintained, transmitted, and transformed through music and performance. Designed for students interested in music, anthropology and gender studies. Cross-listed with MUS 126 and WNST 126.

Seminar; three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. A critical survey of recent anthropological and theoretical work concerning transnational and global sociocultural processes. Special emphasis on transnational, diasporic, and other unbound communities; borderlands; and the impact of global media and communication and transnational migration on community and identity.

ANTH 181G. Research and Findings in the University. (4)
Seminar; three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Within a seminar format, examines the different forms that research and findings take in various disciplines across the University. Includes presentations by faculty from these disciplines. Student work consists of groups projects comparing research in two related, but contrasting, disciplines. Credit is awarded for only one of ANTH 181G or HMSS 003.

ANTH 181X. Cognitive Studies. (4)
Seminar; three hours; outside research, three hours. Prerequisite(s): ANTH 120 or ANTH 123 or ANTH 165 or CS 014 or consent of instructor. An exploration of the application of analytic techniques, methods, and tools from computer science and artificial intelligence to problems in cognitive anthropology and related areas.

ANTH 181Z. Classification, Computers and Knowledge. (4)
Seminar; three hours; outside research, three hours. Prerequisite(s): ANTH 120 or ANTH 123 or ANTH 165 or CS 014 or a course in either botany or biology or consent of instructor. Knowledge structures and classification schemes used in plant taxonomy will be studied. Classification or categorization schemes from linguistics and computer science and concept analysis from abstract mathematics will be explored for ideas and techniques potentially applicable to plant classification. Course research projects will develop computer techniques for assisting in plant classification.

ANTH 183. Methods of Archaeological Analysis. (4)
Lecture, two hours; laboratory, three hours; extra reading, three hours. Prerequisite(s): ANTH 003 or ANTH 005 or consent of instructor. Description and classification of archaeological materials including laboratory work in cataloging and documentation, and the preparation of reports for publication.

ANTH 184. Field Course in Anthropology. (4-16)
Field research, variable. Prerequisite(s): ANTH 175A or consent of the instructor. Study with a qualified professional at selected research sites with on-site supervision. Normally 16 units will be assigned only when the student is engaged in full-time research at a site distant from UC Riverside. Course may be repeated for credit for up to three quarters with consent of the instructor and approval of a research plan by the department chair.

ANTH 185A. Field Course in Archaeology: Survey and Documentation. (4)
Lecture, one hour; discussion, one hour; field, six hours. Prerequisite(s): ANTH 003 or ANTH 005 and either upper-division standing or consent of instructor. The course will train students in field surveying and documentation of historic and prehistoric archaeological sites and features. Students will receive experience in satellite-assisted electronic location; cadastral survey location; Universal Transverse Mercator grid coordinates; field mapping; recording environmental parameters; assembly characterization; assessment significance; and use of archaeological information centers.

ANTH 185B. Field Course in Archaeology: Excavation. (4)
Lecture, one hour; discussion, one hour; field, six hours. Prerequisite(s): ANTH 003 or ANTH 005 and either upper-division standing or consent of instructor. Lectures and archaeological excavation with training in site map-
The process of decipherment and iconographic interpretation of ancient Maya writing and art involves understanding the relationship between human communities and their environments. The pioneering work of the nineteenth century established the foundation for modern approaches to studying ancient Maya concepts and their historical context.

ANTH 186. People and the Environment in Latin America. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An interdisciplinary course focusing on the study of human communities and the environment in Latin America, exploring environmental problems and policies. Cross-listed with INST 186.

ANTH 190. Special Studies. (1-5)
Prerequisite(s): consent of instructor. Independent study and research for qualified undergraduate students under supervision of a particular faculty member. Consent of instructor may be repeated without duplication of credit.

ANTH 190A-ANTH 195B-ANTH 195C.
Senior Thesis. (4-4-4) Beginning any quarter. Optional for anthropology majors, open to senior students having a "B" average in their major, with consent of instructor. The final grade will be deferred until completion of the sequence of work.

ANTH 194. Internship in Anthropology. (1-12)
Field research, one to sixteen hours. Prerequisite(s): consent of instructor. Systematic participation by an individual in studies associated with future career development within the context of an anthropological research project directed by a faculty member. To be graded Satisfactory (S) or No Credit (NC). Repeatable for a maximum of 16 units towards graduation.

ANTH 199H. Senior Honors Research. (1-5)
Research, variable. Independent work under the direction of members of the staff. Consent of instructor may be repeated without duplication of credit.

GRADUATE COURSES

ANTH 209. Field Course in Maya Archaeology. (4-12)
Lecture, two hours; laboratory, three to six hours; outside research, zero to three hours; field, three to twenty-one hours. Prerequisite(s): graduate standing and consent of instructor. Archaeological survey and excavation, including training in: site mapping; use of Satellite-based Global Positioning Systems; natural resources surveying; and field laboratory techniques. Course is repeatable to a maximum of 36 units with consent of instructor and approval of a research plan by the department chair.

ANTH 214. Lithic Analysis. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): ANTH 114A, ANTH 114B, or consent of instructor. Characterization, analysis, and interpretation of stone tools assemblages, with emphasis on debitage.

ANTH 218. Ancient Maya History and Religion. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Along with describing major historical figures and religious concepts of the ancient Maya, this course describes the analytic approaches used for the study of ancient Maya writing and art. The pioneering work of the nineteenth century as well as the most recent findings in the ongoing process of decipherment and iconographic interpretation will be discussed. Basic background needed to begin original research and interpretation will be provided.

ANTH 225R. Proseminar in Kinship. (4)
Lecture, one and one-half hours; seminar, one and one-half hours; outside research, three hours. Prerequisite(s): graduate standing in Anthropology or consent of instructor. Critical examination of defining works in the development of kinship studies and themes in anthropology. Works will be considered in the context of their theoretical tradition, sources, and responses to antecedent work.

ANTH 250A. Seminar in History and Theory of Anthropology: Beginnings. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Systematic and historical treatment of the people, concepts, and research that have contributed to the development of anthropology. Covers the early history of anthropology, up to the rise of structural-functionalism.

ANTH 250B. Seminar in History and Theory of Anthropology: 1920-1970. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Systematic and historical treatment of the people, concepts, and research that have contributed to the development of anthropology. Surveys contemporary theories in anthropology, especially new ones that have arisen as antitheses to structural-functionalism, structuralism, and related approaches.

ANTH 250C. Seminar in History and Theory of Anthropology: 1970 to Contemporary Times. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Systematic and historical treatment of the people, concepts, and research that have contributed to the development of anthropology. Surveys contemporary theories in anthropology, especially new ones that have arisen as antitheses to structural and processual models.

ANTH 251. Theory and Method in Mexican Ethnography. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the basic issues of theory and method in Mexican ethnography. Major streams of thought, including the substance and approaches of rural and urban ethnographies of Mexico are examined.

ANTH 252. Seminar in Archaeology. (4)
Seminar, three hours; research, three hours. Prerequisite(s): consent of instructor. Studies in culture history and in the data and methods of archaeological research. May be repeated for credit.

ANTH 253. Seminar in Physical Anthropology. (4)
Seminar, three hours. Prerequisite(s): consent of instructor. Focuses on the structure of human populations, and the biocultural environments of humans.

ANTH 254. Writing Women: Issues in Feminism(s), Representation, Ethnographic Practice. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Examinations of intersections of power, authority, and representation in the gendered methodologies entailed in the production of anthropological knowledge. A focus on postcolonial and feminist theorizing introduces students to novel debates about ethnographic writing and practices. Text, context, and reflexivity in writing are explored in depth. Cross-listed with WMST 254.

ANTH 255. Field Methods in Ethnomusicology. (4)
Seminar, three hours; outside research, one hour; field, two hours. Prerequisite(s): graduate standing. A theoretical and practical introduction to fieldwork in music and performance. Each student focuses on a different performance group and documents its activities. Interviewing, audio-taping, video-taping, transcribing music and dance, and describing performance events are covered. Cross-listed with MUS 255.

ANTH 256. Seminar in Current Anthropological Research. (4)
Seminar, two hours; individual consultation, one hour. The seminar will normally be conducted by an outstanding scholar on a topic of significant anthropological interest arising out of the scholar's particular research.

ANTH 258. Seminar in Dating and Analytical Techniques in Archaeology. (4)
Seminar, two hours; individual consultation, one hour. Prerequisite(s): consent of instructor. A research seminar devoted to topics in dating and analytical techniques in archaeology involving laboratory instruction and experimental work.

ANTH 259. Seminar in Anthropological Linguistics. (4)
Seminar, three hours; outside research, three hours. Studies in the concepts, methods and data pertinent to anthropological linguistics.

ANTH 261. Seminar in Social Organization. (4)
Seminar, three hours. An exploration of contemporary anthropological theory concerning kinship, sociality, age, grades, and friendship.

ANTH 263. Seminar in Ecological Anthropology. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Selected topics in method and theory of ecological anthropology, including ethnoecology, food production and consumption, development issues, views of the environment, and questions about the relationship of humans to their environments.

ANTH 264. Codices of Ancient Mexico. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. The major manuscripts of the pre-Hispanic and colonial periods of Mesoamerica will be reviewed. Special focus will be on the ancient codices of the Maya, Aztec, Mixtec, and the unprovenienced Borgia Group.

ANTH 270. Special Topics in Ethnomusicology. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): MUS 207, graduate standing, and/or consent of instructor. Focuses on recent scholarship in ethnomusicology and related fields. Theme varies; emphasis is usually on theory and methodology or the study of particular regions or performance traditions. For further information, see Department. Course is repeatable to a maximum of 8 units. Cross-listed with MUS 270.

ANTH 272. Archaeological Theory and Methods. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. A descriptive and historical survey of conceptual and methodological approaches to the analysis of archaeological materials in both the Old and New Worlds. Topics include archaeological models, unit concepts, and research strategy.
PROFESSIONAL COURSES

ANTH 301. The Teaching of Anthropology. (1-4)
Prerequisite(s): graduate standing and consent of instructor. Preparation of course materials; teaching techniques related to the instruction of anthropology; consideration of how to relate student experience to anthropological problems. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ANTH 302. Teaching Practicum. (1-4)
Prerequisite(s): limited to departmental teaching assistants; graduate standing, ANTH 301, or consent of instructor. Supervised teaching in upper- and lower-division Anthropology courses. Required of all teaching assistants. Fulfills teaching portion of Ph.D. teaching requirement. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ART

Subject abbreviation: ART

Erika Suderburg, M.F.A., Chair
Department Office, 1107 Old Leved Hall
(909) 787-4634
http://www.ucr.edu/CHSS/depts/art/ArtHome.html

Professors
Una Barth, M.E.A.
John M. Divola, M.F.A.
Jill Giegerich, M.E.A.
Jonathan W. Green, M.A. (Art/Art History)
James S. Strombomte, M.F.A.
Erika Suderburg, M.F.A.

Professor Emeritus
William T. Bradshaw, M.A.

Lecturer
Gordon L. Thorpe, M.A.

MAJOR

The major in Art is designed primarily for those students preparing for graduate study and for those who plan to continue professionally as artists. However, the Department welcomes the participation of nonmajors and nondegree students.

Degree Requirements
University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The major requirements for the B.A. in Art are as follows:

1. Lower-division requirements (24/25 units)
   a) ART 006/FVC 006 and ART 008 (must be taken during first year of residency in the department)
   b) Three additional lower-division Art courses: ART 001, ART 002, ART 003, ART 004/FVC 004 or ART 007/FVC 007
   c) One of the following Art History courses: AHS 008/FVC 008, AHS 017A, AHS 017B, AHS 017C, or AHS 021/URST 021

2. Upper-division requirements (48 units)
   a) ART 160
   b) One of the following Art History courses: AHS 174/FVC 177, AHS 176/FVC 176, AHS 180, AHS 181, AHS 182, AHS 184/URST 184, AHS 185/URST 185, AHS 186 or any other upper-division Art History course that covers the period 1945 to present
   c) ART 180
   d) A minimum of 32 additional units of upper-division Art course work
   e) ART 195 (Senior Thesis)

To fulfill ART 195 (Senior Thesis), students who have completed at least 32 of the required 48 units of upper-division Art course work make a formal presentation of a thesis project to a faculty committee two quarters prior to actual enrollment in ART 195.

Note: A maximum of 12 upper-division transfer units of established equivalency in Art courses is accepted for credit. Equivalent transfer units in lower-division studio art course work and lower- and upper-division Art History course work is also accepted for credit toward the major in the respective lower- or upper-division category.

A minimum of 36 units of Art must be taken in residence (UCR Department of Art) to fulfill this major.

LOWER-DIVISION COURSES

ART 001. Beginning Drawing and Design. (4)
Lecture, two hours; studio, four hours. Introduction to the materials, techniques, structure and expressive properties of drawing and design. Includes lectures, studio exercises and outside assignments.

ART 002. Beginning Painting and Design. (4)
Lecture, two hours; studio, four hours. Introductory course in the media, techniques, structural and expressive properties of painting and design. Includes lectures, studio exercises and outside assignments.
ART 003. Introduction to Photographic Processes. (5)
Lecture, three hours; studio, four hours. Introduction to the basic principles of photography: an exploration of the tools, materials, and techniques of photography as an expressive medium. Cameras provided.

ART 004. Introduction to Video Art. (4)
Lecture, two hours; screening, six hours. Prerequisite(s): none. An introduction to video as an art form based in production and contemporary media theory. Basic production techniques, operation of the camcorder and the fundamentals of live-action production, and editing. A series of screenings, readings, and discussions examine documentary, experimental, and other applications of the media arts in relation to contemporary art practice and new genres as installation and performance. Cross-listed with FVC 004.

ART 006. Introduction to Contemporary Critical Issues in Art. (4)
Lecture, three hours; field trip, three hours every other week; extra reading, three hours. Examines basic principles and methodologies of theory as applied to the interpretation and creation of works of art. Includes lectures, discussions, readings, screenings, gallery visits, and critiques. Cross-listed with FVC 006.

ART 007. Introduction to Digital Imaging. (4)
Lecture, three hours; laboratory, three hours. Introduction to making art by utilizing the Macintosh computer. Emphasis is on the personal, theoretical, and conceptual implications of such work within the broader field of contemporary art. Cross-listed with FVC 007.

ART 008. Current Topics in Contemporary Art. (4)
Lecture, three hours; field, three hours. Examines visual arts as contemporary phenomenon. Study of recent exhibitions of contemporary art, the way art is culturally distributed, and the ideological and conceptual dialogue surrounding significant contemporary art. Vists to nearby museums and major art galleries are required.

ART 028. From Hamlet to Babylon 5: Introduction to Design in Film, Television, and Theatre. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to the design process for film, television, and theatre. Through exercises, lectures, videos, and on-site visits, students explore the design process, the influence of design on the viewer, and how looks are achieved in different media. Cross-listed with FVC 028 and THEA 038.

UPPER-DIVISION COURSES

ART 102. Intermediate Drawing. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 001 and ART 002 or equivalent and consent of instructor. An intermediate course of study. Subject: primarily still life, landscape and non-figurative images; purpose: a fuller understanding of the technical and expressive aspects of drawing. Studio exercises and in-studio lectures. Course is repeatable to a maximum of 8 units with consent of instructor.

ART 103. Advanced Drawing. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 102: Intermediate Drawing, or equivalent and consent of instructor. An advanced course of study in drawing techniques and the employment of the drawing medium as a terminal means of artistic expression. Course is repeatable to a maximum of 12 units.

ART 104. Life Drawing. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 001 and ART 002 or equivalent and consent of instructor. Media to be pencil, charcoal, pen and ink; subject, primarily the figure; purpose, a fuller understanding of the figure and figure composition; method combines lectures with exercises in studio and outside assignments. Course is repeatable to a maximum of 12 units.

ART 110. Intermediate Painting. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 001 and ART 002 or equivalent and consent of instructor. Subject primarily still-life, landscape and figure, its purpose a fuller understanding of the technical aspects of painting; method studio exercises, in-studio lectures and outside assignments. Course may be repeated for credit to a total of 12 units.

ART 111. Advanced Painting. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 110 and consent of instructor. Advanced problems in figurative and nonfigurative painting. Emphasis on the development of personal direction. Investigation of the individual student's relation to contemporary ideas in painting. In-studio lectures, studio exercises, and outside assignments. May be repeated for credit to a total of 12 units.

ART 120. Printmaking. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 001 and ART 002, or equivalent and consent of instructor. A studio course in graphic expression using traditional printmaking processes with emphasis in lithography and intaglio techniques. Studio exercises, lectures and outside assignments. May be repeated for credit to a total of 12 units.

ART 122. (E-Z). Advanced Printmaking Workshop. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 120 and consent of instructor. Designed to provide concentrated study and practical experience in a single graphic medium. In any one course instruction will focus in lithography, serigraphy, intaglio, or relief processes as determined by the instructor. E. Lithography, serigraphy, intaglio; F. Lithography. May be repeated for credit to a total of 8 units.

ART 124. Printmaking: Photochemical Processes. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 101 and ART 003. An introductory course concentrating on practical and aesthetic problems in photochemical printmaking processes. Topics include photo-etching, photolithography, photogravure and related darkroom and laboratory technologies.

ART 133. Art Workshop. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 001 and ART 002 or equivalent, a minimum of 12 upper-division units in Art, and consent of instructor. Emphasis on independence of the artist. Development of individual projects in varied media as facilities permit. Studio exercises, lectures, and outside assignments. May be repeated for credit to a total of 12 units.

ART 134. Mixed Media. (4)
Lecture, three hours; studio, three hours. Prerequisite(s): ART 001 and ART 002. Exploration into experimental methods for creating an image; techniques of froottage, collage, photo transfer, modeling and mold making, assemblage.

ART 135. Intermedia: Art, Media, and Culture. (4)
Lecture, two hours; screening, six hours. Prerequisite(s): upper-division standing or consent of instructor. A study of performance, photography, video, film, television, installation, and other related "intermedias." Through field trips, screenings, readings, and discussion, focuses on artworks within and without the mass media: how they are constructed, written about, analyzed, and viewed in the larger construction of culture. Cross-listed with FVC 135.

ART 136. Installation and Site-Specific Art. (4)
Lecture, three hours; studio, three hours. Prerequisite(s): consent of instructor. Focuses on performance, photo installation, computer art, video/film, site-specific installation, sculpture, and/or other intermedia. Concentrates on production and analysis of site-specific art through screenings, readings, discussion, and critique. Course is repeatable to a maximum of 8 units.

ART 140. Intermediate Photography. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 003 or equivalent. Focuses on projects and assignments to develop individual creative approaches in photography and strengthens controls and techniques in black and white printing. Students are required to furnish their own cameras. Course is repeatable to a maximum of 8 units. Cross listed with FVC 140.

ART 142A-ART 142B. Color Photography. (4-4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 003. ART 142A provides students with a basic background in the history, theory, techniques, and materials of color photography. ART 142B emphasizes the application of this knowledge to fine arts photography through development of student creative potential. Students are required to furnish their own cameras. Each course is repeatable to a maximum of 8 units.

ART 144. Large Format Photography. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 140/FVC 140. Introduction to the use of large format cameras, including 2 1/2" sq., 4" x 5", 5" x 7", 8" x 10". View camera technique, the zone system, and the contact print will be covered, along with review of aesthetic issues and problems associated with large format work. Cameras provided. May be repeated for credit to a total of 8 units.

ART 145. Advanced Photography Workshop. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 140/FVC 140; consent of instructor. A study of experimental advanced photographic techniques, including examination of critical and creative problems. Course is repeatable to a maximum of 12 units. Cross listed with FVC 147.

ART 146 (E-Z). Topics in Advanced Photography. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 140/FVC 140; consent of instructor. An advanced studio course designed to focus on selected special techniques or approaches to photography. Subject matter is determined by the instructor and may vary. K. Polaroid Photography; L. The Book and the Photograph; M. Dye Transfer; N. Current Art Practices.

ART 150. Intermediate Video Art. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): ART 004/FVC 004. Intermediate course in video art production and theory designed to continue work done in ART 004/FVC 004. Screenings, readings, and discussions. Advanced editing techniques and theory, storyboard, and sound design. Application of media arts to contemporary art practice and new genres, including installation, documentary, experimental, and performance. Equipment provided. Course is repeatable to a maximum of 8 units. Cross-listed with FVC 150.
ART 160. Intermediate Art Theory. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ART 006/FVC 006 recommended. Discusses current critical and theoretical issues in modern and contemporary art. Examines student’s art production in light of contemporary art practice and in relation to the interpretation and creation of art inclusive of issues of race, gender, politics, aesthetics, class, and sexuality. Cross-listed with FVC 160.

ART 170. Advanced Digital Imaging. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): ART 007/FVC 007; knowledge of Macintosh interface and Adobe Photoshop. An advanced studio and production course in digital imaging which proceeds from techniques initiated in ART 007/FVC 007. Emphasizes the use of computer and electronic technology as a tool for making art. Addresses issues related to making art and the cultural implications of digital technology through class projects, readings, lectures by visiting artists, field trips, and critiques of work in progress. Course is repeatable to a maximum of 8 units. Cross-listed with FVC 175.

ART 180. Contemporary Issues/Contemporary Practice. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): any lower-division studio art course. A course structured around a sequence of three to six visiting artists, authors, and critics. Visitor presentations will be augmented by relevant articles and in-class presentations. Students will generate both written and verbal responses to specific artists and topics. Artists and topics to be determined by the instructor. Course is repeatable to a maximum of 12 units.

ART 190. Special Studies. (1-5)
To be taken with the consent of the chair of the department as a means of meeting special curricular problems. Total credit may not exceed eight units.

ART 195. Senior Thesis. (4)
Independent work, twelve hours. Prerequisite(s): completion of 32 units of upper-division studio art courses and review of a preliminary portfolio two quarters prior to intended enrollment. The student produces and presents a finished body of work to the faculty.

ART 198-I. Individual Internship. (1-12)
Field, two hours per unit. Prerequisite(s): consent of instructor and upper-division standing. Work with an appropriate professional individual or organization to gain experience and skills in the student’s chosen art specialty. Letter grade or Satisfactory (S) No Credit (NC). Repeatable to a total of 16 units; maximum of 4 units count toward major in Art.

ART HISTORY

Subject abbreviation: AHS

Conrad Rudolph, Ph.D., Chair
Department of Fine Arts, 2126 Olmstead Hall
(909) 787-4627
http://www.ucr.edu/CHSS/depts/arthist/

Professors Emeriti
Dertickson M. Brinkerhoff, Ph.D.
Thomas O. Pelzel, Ph.D.

Associate Professors
Ginger C. Hsu, Ph.D.
Steven E. Ostrow, Ph.D.

Assistant Professors
Patricia A. Morton, Ph.D.
Caroline P. Murphy, Ph.D.

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Acting Assistant Professor
Eduardo de Jesus Douglas, Ph.D.

Cooperating Faculty
Karl A. Taube, Ph.D. (Anthropology)

MAJOR
Throughout history, art and architecture have been among the most powerful means of social interaction and communication. Today, the visual dominates perhaps more than ever before. The discipline of Art History attempts to critically analyze how art and architecture have been used in the past and are used in the present through a thorough understanding of their visual, contextual, and ideological bases. Toward this aim, the major provides the framework for the critical study of a wide range of both Western and non-Western cultures in different periods of human history, and in all media.

The department works closely at both the undergraduate and graduate levels with the UCR/California Museum of Photography to give students an opportunity to work with archival and art photographs, and with the Jack and Marilyn Sweeney Art Gallery to provide a similar experience with original material in a multimedia environment.

Career Opportunities
The major in Art History is a versatile one. Since Art History is an interdisciplinary subject that teaches critical thinking, majors are well-prepared to find successful careers in teaching, research, museums, galleries, art criticism, publishing, historic preservation, and law, as well as to obtain advanced degrees in Art History, the humanities, social sciences, and professional schools.

Education Abroad Program
The Department of Art History actively encourages eligible students to take advantage of the Education Abroad Program (EAP) in order to enrich their knowledge and experience of the different cultures which are, in part, the subject of Art History. Students on EAP receive UC credit toward their degrees, and, with careful planning, make normal progress toward graduation. ['junior standing at the time of departure is the norm (except for specific short-term programs). While on EAP, students are eligible for financial assistance. For more information, contact EAP at the International Services Center.

Degree Requirements

University Requirements
See the Undergraduate Studies Section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

Art History Major
The major requirements for the B.A. in Art History are as follows:

1. Lower-division requirements (16 units)
   AHS 015, AHS 017A, AHS 017B, and AHS 017C
   (It is strongly recommended that the AHS 017 series be taken sequentially.)

2. Upper-division requirements (36 units)
   a) AHS 192
   b) At least 4 units from each of the following seven areas:
      1. Asian: AHS 139/AST 139, AHS 140/AST 140, AHS 141/AHS 141, AHS 143/AST 143, AHS 144/AST 144
      2. Ancient: AHS 147, AHS 148, AHS 153, AHS 154
      3. Medieval: AHS 155, AHS 156, AHS 157, AHS 159
      4. Renaissance: AHS 161, AHS 162, AHS 163, AHS 164, AHS 165
      5. Seventeenth and Eighteenth Centuries: AHS 171, AHS 172, AHS 173
      6. Nineteenth and Twentieth Centuries: AHS 174/FVC 177, AHS 176/FVC 176, AHS 177, AHS 180, AHS 181, AHS 192, AHS 185/FVC 186
      7. Architecture: AHS 146/AST 147, AHS 164/URST 184, AHS 165/URST 185
   c) Four (4) units of upper-division Art History

3. Four (4) electives from
   AHS 008/FVC 008, AHS 009/ANTH 009, AHS 021/URST 021, AHS 027/ANTH 027, or any upper-division Art History or Art course
Art History/Religious Studies Major

The Art History/Religious Studies Major combines the disciplinary interest in the history of the visual arts with its related religious content and background. Three concentrations are offered. Students are expected to select one family of religions, either Asian or Western, and combine it with the study of the history of the visual arts in the corresponding area of artistic endeavor. Or, students wishing to combine Asian and Western materials to serve a comparative purpose are invited to design their own major in consultation with faculty representatives from both departments. Students are strongly encouraged to participate in the Education Abroad Program (EAP) and in internships abroad. Students in this major will be well prepared for graduate studies in either art history or religious studies.

Major Requirements

The major requirements for the B.A. degree in Art History/Religious Studies are as follows:

All requirements of the College of Humanities, Arts, and Social Sciences.

Western Concentration (52 units)
1. Lower-division requirements (12 units)
   a) Art History (12 units):
      AHS 017A, AHS 017B, AHS 017C
   b) Religious Studies (4 units) choose from:
      RLST 007, RLST 010
2. Upper-division requirements (36 units)
   a) Art History (16 units) choose from:
      AHS 155, AHS 156, AHS 157, AHS 159, AHS 161, AHS 162, AHS 163, AHS 164, AHS 171, AHS 172
   b) Religious Studies (20 units) choose from:
      RLST 100, RLST 111, RLST 121, RLST 128 (E-Z), RLST 130, RLST 131, RLST 135/HISE 130, RLST 136, RLST 171, RLST 172
3. Optional 190 level work in either Art History or Religious Studies

Note: Students are responsible for satisfying all prerequisites for upper-division courses (please see catalog for prerequisite information).

Asian Concentration (52 units)
1. Lower-division requirements (12 units)
   AHS 015, AST 030/CHN 030, RLST 005
2. Upper-division requirements (40 units)
   a) Art History (16 units):
      AHS 140/AST 140, AHS 141/AST 141, AHS 143/AST 143, CPT 141
   b) Religious Studies (24 units) choose from:
      RLST 101, RLST 103, RLST 105, RLST 106, RLST 142/AST 142/CHN 142, RLST 144/CPT 144, RLST 172
3. Optional 190 level work in either Art History or Religious Studies

Note: Students are responsible for satisfying all prerequisites for upper-division courses (please see catalog for prerequisite information).

Student-designed Comparative Concentration (52 units)
1. Lower-division requirements (12 units)
   a) Art History, choose at least 4 units:
      AHS 015, AHS 017A, AHS 017B, AHS 017C, AST 030/CHN 030
   b) Religious Studies, choose at least 4 units:
      RLST 005, RLST 007, RLST 010
2. Upper-division requirements (40 units)
   a) Art History, choose at least 12 units:
      AHS 140, AHS 141, AHS 143, AHS 155, AHS 156, AHS 157, AHS 159, AHS 161, AHS 162, AHS 163, AHS 164, AHS 171, AHS 172, CPT 141
   b) Religious Studies, choose at least 12 units:
      RLST 100, RLST 101, RLST 103, RLST 105, RLST 106, RLST 111, RLST 121, RLST 128 (E-Z), RLST 130, RLST 131, RLST 135/HISE 130, RLST 136, RLST 142/AST 142/CHN 142, RLST 144/CPT 144, RLST 171, RLST 172
3. Optional 190 level work in either Art History or Religious Studies

Note: Students are responsible for satisfying all prerequisites for upper-division courses (please see catalog for prerequisite information).

Student-designed Comparative Concentration (52 units)
1. Lower-division requirements (12 units)
   a) Art History, choose at least 4 units:
      AHS 015, AHS 017A, AHS 017B, AHS 017C
   b) Religious Studies, choose at least 4 units:
      RLST 005, RLST 007, RLST 010
2. Upper-division requirements (40 units)
   a) Art History, choose at least 12 units:
      AHS 140, AHS 141, AHS 143, AHS 155, AHS 156, AHS 157, AHS 159, AHS 161, AHS 162, AHS 163, AHS 164, AHS 171, AHS 172, CPT 141
   b) Religious Studies, choose at least 12 units:
      RLST 100, RLST 101, RLST 103, RLST 105, RLST 106, RLST 111, RLST 121, RLST 128 (E-Z), RLST 130, RLST 131, RLST 135/HISE 130, RLST 136, RLST 142/AST 142/CHN 142, RLST 144/CPT 144, RLST 171, RLST 172
3. Optional 190 level work in either Art History or Religious Studies

Note: Students are responsible for satisfying all prerequisites for upper-division courses (please see catalog for prerequisite information).

Art History/Administrative Studies Major

The major between the departments of Art History and Business Administration provides students with training in management and the history of art to allow pursuit of a wide variety of future career and educational options. The major requirements for the B.A. degree in Art History/Administrative Studies are as follows:

All requirements of the College of Humanities, Arts, and Social Sciences.

1. B.A. Art History requirements (52 units)
   a) Lower-division requirements (16 units):
      AHS 015, AHS 017A, AHS 017B, AHS 017C
   b) Upper-division requirements (36 units):
      (1) AHS 192 Junior Seminar (4 units)
      (2) Four (4) 4 units in each of 7 areas (Asian, Ancient, Architecture, Medieval, Renaissance, 17th/18th Centuries, and 19th/20th Centuries)
      (3) Four (4) units of upper-division Art History courses

2. Administrative Studies requirements (37 units)
   a) Four lower-division courses (17 units):
      (1) BSAD 010, BSAD 020A
      (2) STAT 048 or equivalent (may be used to satisfy breadth requirements)
      (3) CS 008 (may be used to satisfy breadth requirements)
   b) Two upper-division courses (8 units) from the following:
      (1) ECON 102A or ECON 130 or ECON 162/BSAD 162
      (2) PSYC 140 or PSYC 142/BSAD 142
      (3) SOC 150/BSAD 150 or SOC 151/BSAD 151 or SOC 171
      (4) POSC 181 or POSC 182/BSAD 182 or POSC 183
      (5) ANTH 127 or ANTH 131

These two courses must be outside the discipline of the cooperating major and cannot be courses included as part of the three-course Business Administration track or their cross-listed equivalents.

   c) A three-course track (12 units) in Business Administration courses, from one of the following:
      (1) Organizations (General):
         BSAD 103/ANTH 103, BSAD 150/SOC 150, BSAD 151/SOC 151, BSAD 176/SOC 176
      (2) Human Resources Management/Labor Relations:
         BSAD 142/PSYC 142, BSAD 152/ECON 152, BSAD 153/ECON 153, BSAD 155, BSAD 157
      (3) Business and Society:
         BSAD 116/PHIL 116, BSAD 161, BSAD 182/POSC 182, BSAD 186/POSC 186
      (4) Marketing:
         BSAD 110, and two from BSAD 112, BSAD 113, BSAD 114, BSAD 117
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(5) Managerial Accounting/Taxation: BSAD 163 and two from BSAD 166, BSAD 166A or BSAD 166B

(6) Financial Accounting: BSAD 163, BSAD 165A, BSAD 165B

(7) Finance: BSAD 134/ECON 134 and two from BSAD 135A, BSAD 136, BSAD 137, BSAD 138, BSAD 139

(8) Management Information Systems: BSAD 170, BSAD 171, BSAD 173

(9) Production Management: BSAD 121/STAT 121 and two from BSAD 122, BSAD 126, BSAD 127/STAT 127

Note: In filling the dual requirements of the major students may not count more than two courses toward both parts of their total requirements (Art History and Administrative Studies requirements).

Minor

The minor upper-division requirements are designed to encourage study across art-historical areas, while providing the opportunity for some concentration in one specific area.

Requirements for the minor in Art History are as follows:

1. Lower-division requirements

Any 8 units of AHS 017A, AHS 017B, and AHS 017C; or 4 units of AHS 017A, AHS 017B, or AHS 017C plus 4 units from any of the other departmental lower-division courses

2. Upper-division requirements

Sixteen (16) upper-division units selected from the seven areas listed under the major (No more than 8 units may be selected from any one area.)

See [Minors] under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

GRADUATE PROGRAM

The graduate committee meets once a year to consider applications to the program (due January 5 for financial aid consideration). Normally, application is for the fall quarter. All applicants are required to submit their scores for the General Test section of the Graduate Record Examination.

Master’s Degree

The department offers upper-division and graduate courses in the history of Western and non-Western art from ancient to contemporary times (including the history of photography), emphasizing the interpretation of art in its historical and cultural context. The master’s degree may be completed in two years; the first year focuses on course work, the second on research and writing a thesis. The study of works of art and archival material is facilitated by regional museums and collections, including the UCR/California Museum of Photography. Students are encouraged to enroll in art internships offered by institutions in Southern California.

For the master’s degree, students must complete 40 units of course work, of which at least 24 units must be earned in graduate courses. In addition to AHS 251P (Proseminar in Methodology), all students are required to take three graduate seminars in the department, of which two must be in fields outside their area of specialization. A maximum of 12 units is allowed for thesis research and writing (AHS 297 or AHS 299). The remaining units can be satisfied with graduate or undergraduate upper-division course work.

Upon completion of the master’s degree students are expected to have acquired an expertise in the area of their thesis specialization and, furthermore, a broad training in all seven areas offered by the department (Asian, Ancient, Medieval, Renaissance, Seventeenth-Eighteenth-Century, Nineteenth-Twentieth-Century, and Architecture). During their first quarter of residence all students must confer with the graduate advisor concerning their undergraduate preparation. Students who did not satisfactorily complete courses in at least four of the areas offered by the department as undergraduates are expected to remedy the deficiency by taking undergraduate courses in the appropriate areas for which they will be given up to 16 units of graduate credit. Students of Western art history are required to take two courses outside the field of Western art history. Students specializing in Asian art history must take two courses in Western art history. An acceptable thesis and defense (mid-thesis progress meeting) is expected within one year after completion of all formal course work.

Students of Western art history must demonstrate a proficiency in one European language relevant to their area of study. One Asian language, relevant to the area of study, is required for students specializing in Asian art history. The relevant language is to be chosen in consultation with the Graduate Advisor and, if possible, the potential M.A. thesis advisor. This language requirement is meant to provide the student with a deep understanding of a foreign language such that the student can perform graduate level research in this language. The language requirement must be satisfied by the end of the third quarter in residence, preferably earlier. Since most Ph.D. programs have additional language requirements, students planning to continue on to obtain a Ph.D. are strongly urged to consult with their graduate and thesis advisors regarding additional foreign language recommendations.

LOWER-DIVISION COURSES

AHS 007. World Art: Images, Issues, and Ideas. (4) Lecture, three hours; discussion, one hour; extra reading, two hours. Prerequisite(s): none. An introduction to artistic achievements of the world’s cultures and ways in which they can be viewed. Considered such issues as the use of artworks as historical documents; connections between “high art” and popular culture; and the relationship between artist, viewer, artistic tradition, and society.

AHS 008. Modern Western Visual Culture. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): none. Focusing on broadly defined cultural practices—painting, photography, video, architecture, and film—this course introduces the major historical, aesthetic, and theoretical issues in twentieth-century visual culture with an eye toward political and social themes relevant to contemporary life. Cross-listed with FVC 008.

AHS 009. Native American Art. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): none. This course is a comparative introduction to the material culture and art of Native North America. It will investigate architecture, dress, sculpture, and other material objects in the context of divergent pre-Columbian and modern aesthetics and belief systems. Cross-listed with ANTH 009.

AHS 015. Arts of Asia. (4) Lecture, three hours; discussion, one hour; outside research, two hours. Prerequisite(s): none. A survey of the arts of painting, sculpture, and architecture in the countries of Asia, especially China, India, and Japan, examining both the links between different areas in Asia and the particular national characters and histories of the countries. Hsu

AHS 017A. History of Western Art: Prehistoric to Byzantine. (4) Lecture, three hours; discussion, one hour; extra reading, two hours. Prerequisite(s): none. A survey of the visual arts of the ancient Near East and Egypt, the Greek world, and the Roman and Byzantine empires. Topics include the growth of urbanism, art as an expression of religious and political beliefs, and cultural contact as a source of artistic change.

AHS 017B. History of Western Art: Medieval to Renaissance. (4) Lecture, three hours; discussion, one hour; extra reading, two hours. Prerequisite(s): none. A survey of the visual arts of Europe in the Middle Ages and Renaissance. Topics include the religious and political functions of art in the reestablishment of high civilization and the increased status of the individual artist. Murphy

AHS 017C. History of Western Art: Baroque to Modern. (4) Lecture, three hours; discussion, one hour; extra reading, two hours. Prerequisite(s): none. A survey of the visual arts of Europe and America from 1600 through the present. Topics include the religious and political roles of art, the rise of secular imagery, the increased role of women in the arts, and the impact of popular culture and photography, and the other new media in the visual arts. Ostrow
AHS 018. Introduction to Writing and Painting in China. (4)
Lecture, three hours; extra reading, two hours; written work, one hour. Prerequisite(s): none. A survey of Chinese calligraphy and painting, focusing on their development in history and their practice in Chinese society. Demonstrations of writing and painting are included. Cross-listed with AST 018. Hsü

AHS 021. Introduction to Architecture and Urbanism. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): none. An introduction to the built environment including buildings, gardens, and cities, examined in terms of historical, cultural, social, technological, and political factors. Emphasis on examples from Southern California. Cross-listed with URST 021. Morton

AHS 027. Art of Pre-Columbian America. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): none. A survey course intended to provide an up-to-date background to the ancient art of Mexico, Central America, and the Andean region of Western South America. The various peoples and art of pre-Columbian America are discussed according to the three broad cultural regions of Mesoamerica, the Intermediate Area (Lower Central America and northwestern South America), and Andean area. Lectures are illustrated with slides of particular sites and important examples of pre-Columbian art. Cross-listed with ANTH 027.

AHS 028. Art and Architecture of Latin America. (4)
Lecture, three hours; individual study three hours. Introduces Latin American art and architecture from European conquest to the present. Topics include religious and secular art and architecture, hybridization of indigenous and imported styles, national styles after independence, Mexican murals, women artists, Latin American modernismo, and Chicano and Border art.

AHS 139. Early Chinese Art. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. A survey of Chinese art from the Neolithic period to the end of the Tang Dynasty (tenth century A.D.), with concentration on themes, subjects, styles, theories, and purposes discussed in their cultural and historical contexts. Cross-listed with AST 139. Hsü

AHS 140. Chinese Painting of the Song and Yuan Dynasties. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. The history of early Chinese painting, from the beginning to the fourteenth century, with concentration on the Song and Yuan dynasties (A.D. 960-1367). The development of themes, subjects, styles, theories, and purposes discussed in their cultural and historical contexts. Cross-listed with AST 140. Hsü

AHS 141. Chinese Painting of the Ming and Qing Dynasties. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. The history of later Chinese painting (from the fourteenth to the eighteenth century). Investigates new pictorial genres, art theories, political environment, popular taste, and the changing social role of the artist. Cross-listed with AST 141. Hsü

AHS 143. Text and Image in Chinese Painting. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. Examines the art of writing and painting in China, focusing on the close relationship between written language and pictorial image. Reading knowledge of the Chinese language is not necessary. Cross-listed with AST 143. Hsü

AHS 144. Japanese Painting: Twelfth to Nineteenth Century. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. History of the traditional Japanese house from prehistoric times to the nineteenth century. Examples used to place the Japanese house within the general history of Japanese architecture and within its social and cultural context. Cross-listed with AST 144. Hsü

AHS 146. The Japanese House. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. The architecture, sculpture, painting, and minor arts of Ancient Greece from the earliest Archaic period through the Hellenistic age.

AHS 147. The Art of Greece. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. The architecture, sculpture, painting, and minor arts of Ancient Rome from the first to the end of the first century B.C. Examples used to place the Roman house within the general history of Roman architecture and within its social and cultural context.

AHS 148. The Art of Rome. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. The architecture, sculpture, painting, and minor arts of Ancient Rome from the Republic through the Age of Constantine with a consideration of the problems of the relationship of Hellenistic art to that of Rome.

AHS 153. Art and Myth in Ancient Rome. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017A or upper-division standing or consent of instructor. The architecture, sculpture, painting, and minor arts of Ancient Rome from the first to the end of the first century B.C. Examples used to place the Roman house within the general history of Roman architecture and within its social and cultural context.

AHS 154. The Art of the Hellenistic Kingdoms. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017A or upper-division standing or consent of instructor. The examination of the sculpture, painting, and other arts of the Mediterranean world from the empire of Alexander the Great through the death of Julius Caesar. Examines the transformations of the classical tradition, the creation of imperial imagery, and the connections between Greek, Etruscan, early Roman, and Eastern art.

AHS 155. Early Christian Art. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017A or upper-division standing or consent of instructor. Architecture, mosaic, wall painting, manuscript illumination, and sculpture from the origins of Christianity to the final dissolution of the Roman Empire. Stresses the role of art in the co-option of the Church by the Empire, and then in the aftermath of its fall. Rudolph

AHS 156. Early Medieval Art. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017B or upper-division standing or consent of instructor. Manuscript illumination, barbarian jewelry, architecture, and sculpture from the fall of the Roman Empire, through the Carolingian Empire, to the tenth century. Stresses the interplay between indigenous Germanic and “foreign” classical traditions. Rudolph

AHS 157. Romanesque Art. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): AHS 017B or upper-division standing or consent of instructor. Architecture, sculpture, and illuminated manuscripts of the eleventh and twelfth centuries. Stresses the role of the pilgrimage and of politics during the period of the revival of monumental architecture and perhaps the greatest public sculpture of the Middle Ages. Rudolph

AHS 159. Gothic Art. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): AHS 017B or upper-division standing or consent of instructor. Architecture, sculpture, and stained glass in the twelfth and thirteenth centuries. Stresses the political origins and social setting of public art during this period of the reestablishment of urban culture with its resultant social tensions. Rudolph

Lecture, three hours; outside research, three hours. Prerequisite(s): AHS 017B or upper-division standing or consent of instructor. Surveys all media—paintings, sculpture, architecture, and gardens—within their historical and cultural context. Murphy

AHS 162. Italian Renaissance: Fifteenth- and Sixteenth-Century Rome. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): AHS 017B or upper-division standing or consent of instructor. Surveys all media—paintings, sculpture, architecture, and gardens—within their historical and cultural context. Murphy

AHS 163. Italian Renaissance: Fifteenth- and Sixteenth-Century Venice and the Veneto. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): AHS 017B or upper-division standing or consent of instructor. Surveys all media—paintings, sculpture, architecture, and gardens—within their historical and cultural context. Murphy

AHS 164. The Northern Renaissance. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017B or upper-division standing or consent of instructor. Surveys the paintings of the Netherlands and Germany within their historical and cultural, mainly religious context. Murphy

AHS 165. Women Artists in Renaissance Europe, 1400-1600. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017B or upper-division standing or consent of instructor. Surveys the lives and work of women artists in Renaissance Europe from perspectives
offered by the latest scholarly literature. Key topics considered are circumstances under which it was possible for women to become artists, how these women evolved from artists practicing in the cloistered convent to artists participating in the competitive public market place, what they painted, and who were their patrons. Cross-listed with HISE 133 and WNST 170.

AHS 171. Seventeenth Century European Art. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017B or AHS 017C or upper-division standing or consent of instructor. Examination of the dominant trends and figures of the Italian, French, Spanish, Flemish, and Dutch Baroque periods. Explores such issues as the development of illusionistic ceiling decoration, the theoretical basis of Baroque art, and arts's subservience to the Church and the royal court. Ostrow

AHS 172. Baroque Rome. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. Focuses on the center of Baroque culture in seventeenth-century Rome. Painting, sculpture, architecture, and urban planning examined in their political and religious context, and in terms of the ecclesiastical and private patrons who transformed Rome into one of the world’s most important cities. Ostrow

AHS 173. European Art of the Eighteenth Century. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. Examines major developments in eighteenth-century painting, sculpture, and interior decoration from the emergence of the Rococo to the dawn of Neoclassicism. Includes the response of art to new forms of patronage, the decline of history painting, and art functioned as social and political commentary. Ostrow

AHS 174. History of Photography: Nineteenth Century. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. A study of the history of photography from its development in the 1830s to its formulation and application as an artistic medium around 1900. Examines photography in its social and aesthetic contexts, making use of the study collection of photographs and cameras at the UCR/California Museum of Photography whenever possible. Cross-listed with PVC 177.

AHS 176. History of Photography: Twentieth Century (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. A study of major developments in photography and photographic technologies from the turn of the century to the present, with an emphasis on the broad uses of photography in artistic, broadly cultural, and political contexts. Incorporates the resources of the UCR/California Museum of Photography whenever possible. Cross-listed with PVC 176.

AHS 177. American Art: Colonial Period to 1900. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. Painting and architecture in the United States from the Colonial period to 1900.

AHS 180. Modern European Art I: Nineteenth Century. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. Painting and sculpture in Europe from the French Revolution to the Franco-Prussian War. Introduces students to the ideas and concepts of modern European art and traces artistic developments from Neoclassicism to the emergence of Impressionism in a broad cultural, social, and political context. Forster-Hahn

AHS 181. Modern Art II: Art in Europe, 1870-1945. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. Traces the history of the modern movement from Impressionism to the end of World War II. Emphasis is on the artists in their interrelationships to the political events and social conditions of the period and the development of modernism in Europe under Fascism and Communism. Forster-Hahn

AHS 182. Modern Art III: Western Art after 1945. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. Theories and practices of contemporary art in Europe and the United States, tracing developments in painting, photography, and new media in their social context. Focuses on the postmodernism in the visual arts, and discusses work in relation to postmodern theories of representation, sexual difference, and cultural identity. Jones

AHS 184. Modern Architecture. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or AHS 021/URST 021 or upper-division standing or consent of instructor. Modern architecture and its sources from 1800. Cross-listed with URST 184. Morton

AHS 185. Architectural Theory from Vitruvius to Venturi. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017A or AHS 017B or AHS 017C or AHS 021/URST 021 or upper-division standing or consent of instructor. Modern architecture and its sources from 1800. Cross-listed with URST 185. Morton

AHS 186. Film, Video, and Art: Theories and Histories. (4) Lecture, three hours; screening, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. Covers the intersection of film and art in twentieth-century culture. Addresses the relationship between painting, photography, video, and film in Euro-American or non-Western art. Studies films about art and artists and examines histories of "art" or avant-garde films. Cross-listed with PVC 186. Jones

AHS 190. Special Studies. (1-5) To be taken with the consent of the chair of the department as a means of meeting special curricular problems. Course is repeatable to a maximum of 12 units.

AHS 192. Junior Seminar in Art History (4) Seminar, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. Painting and architecture in the United States from the Colonial period to 1900.

AHS 195. Senior Honors Thesis (1-4) Thesis, three to twelve hours. Prerequisite(s): admission to the University Honors Program or consent of the Art History Department. Independent research and preparation of a senior honors thesis completed under the supervision of a faculty member. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 8 units.

AHS 1984. Individual Internships (1-12) Research, variable. Prerequisite(s): consent of instructor and upper-division standing. Individual study or apprenticeship in a museum, art library, or slide and photo archive in order to gain practical experience and skills for future professional work. Graded Satisfactory (S) or No Credit (NC). Repeatable to a total of 16 units.

GRADUATE COURSES

AHS 251P. Proseminar in Methodology. (4) Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to the history and methodologies of Art History. Covers the methodologies, models, and approaches of different periods from Vasari to the present. Course is repeatable as topics change.

AHS 252. History and Ideology of the Museum. (4) Seminar, three hours. Prerequisite(s): AHS 251P or consent of instructor. From princely collection to public museum: a history of collecting and the evolution of the museum as a cultural institution in the western world. An investigation of sources, documents and historiography complemented by a study of museums and collections in the Los Angeles area. Forster-Hahn

AHS 260. Seminar in Latin American Art. (4) Seminar, three hours; outside research, two hours; term paper, one hour. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history and theory of Latin American art from the European conquest to the present. Course is repeatable as topics change.

AHS 267. Seminar in Later Chinese Art. (4) Seminar, three hours; outside research, three hours; research paper, one hour. Prerequisite(s): graduate standing or consent of instructor. Special topics in later Chinese art. Course is repeatable as topics change. Hsü.

AHS 271. Seminar in Ancient Art. (4) Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history and theory of Latin American art from the European conquest to the present. Course is repeatable as topics change. Hsü.

AHS 272. Seminar in Medieval Art. (4) Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Selected issues of the function of art within medieval social, political, religious, and intellectual culture. Course is repeatable as topics change. Rudolph

AHS 273. Seminar in Renaissance Art. (4) Seminar, three hours; outside research, two hours; term paper, one hour. Prerequisite(s): graduate standing or consent of instructor. Special topics in Italian and/or Northern Renaissance art. Course is repeatable as topics change. Murphy

AHS 274. Seminar in Seventeenth- and Eighteenth-Century Art. (4) Seminar, three hours; outside research, two hours; term paper, one hour. Prerequisite(s): graduate standing or consent of instructor. Special topics in seventeenth-
AHS 276. Seminar in Nineteenth-Century Art. (4)
Seminar; three hours; outside research, two hours; term paper, one hour. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history and theory of nineteenth-century European and/or American art. Course is repeatable as topics change. Forster-Hahn

AHS 277. Seminar in Twentieth-Century Art. (4)
Seminar; three hours; outside research, two hours; term paper, one hour. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history and theory of twentieth-century European and/or American art. Course is repeatable as topics change. Forster-Hahn

AHS 278. Seminar in Modern Architecture. (4)
Seminar; three hours; outside research, three hours; research paper, one hour. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history and theory of nineteenth- and twentieth-century architecture and urbanism. Course is repeatable as topics change. Morton

AHS 283. Seminar in History of Photography. (4)
Seminar; three hours; outside research, three hours; research paper, one hour. Prerequisite(s): graduate standing or consent of instructor. Selected topics in the history of photography, with an emphasis on new theories and histories of photographic practice. Students encouraged to do research projects drawing on the collections of the UCR/California Museum of Photography. Course is repeatable as topics change. Green, Jones

AHS 284. Seminar in Contemporary Art and Theory. (4)
Seminar, three hours; individual study three hours; research paper, one hour. Prerequisite(s): graduate standing or consent of instructor. Studies of selected topics in contemporary art, photography, and related media, with an emphasis on critical theories of representation and issues of practice. Course is repeatable as topics change. Jones

AHS 290. Directed Studies. (1-6)
Research. Variable. Prerequisite(s): consent of instructor. Independent work under a staff member’s supervision in a particular field. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

AHS 292. Concurrent Analytical Studies. (1-4)
Research, three to twelve hours. Prerequisite(s): graduate standing and consent of instructor. To be taken concurrently with a 100-series course, but on an individual basis. It may be devoted to research, criticism, and written work of graduate order commensurate with the number of units elected. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

AHS 297. Directed Research. (1-6)
Research, variable. Prerequisite(s): consent of instructor, completion of language requirement and one seminar. Research study or exploratory work toward the development of the thesis. Graded Satisfactory (S) or No Credit (NC).

AHS 298-I. Individual Internship. (1-4)
Research. Individual study or apprenticeship in a museum, art library or slide and photo archive in order to gain practical experience and skills for future professional work. Graded Satisfactory (S) or No Credit (NC). Repeatable to a total of 12 units. Not more than 8 units count toward the 40 units required for the M.A.

AHS 299. Research for Thesis. (1-12)
Variable hours. Prerequisite(s): consent of instructor, completion of language requirement and one seminar. Thesis research and writing. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

AHS 301. Directed Studies in the Teaching of the History of Art. (3)
Seminar; two hours; consultation, one hour. Prerequisite(s): graduate standing. A program of weekly meetings and individual formative evaluation required of new Art History Teaching Assistants. Covers instructional methods and classroom/section activities. Conducted by the Teaching Assistant Development Program and department faculty. Credit is not applicable toward degree unit requirements. Graded Satisfactory (S) or No Credit (NC).

AHS 302. Teaching Practicum. (1-4)
Lecture, one to four hours; seminar, one hour. Prerequisite(s): limited to departmental teaching assistants; graduate standing. Supervised teaching in upper and lower-division Art History courses. Required of all Art History teaching assistants. Credit not applicable toward degree unit requirements. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

Asian Studies

Subject abbreviation: AST

Vivian-Lee Nytay, Ph.D., Chair
Committee Office, 2624 H MSS
(909) 787-5007, x1421

Committee in Charge
Eugene N. Anderson, Ph.D. (Anthropology)
Linda Bell, Ph.D. (History)
Christopher Bolton, Ph.D. (Comparative Literature and Foreign Languages)
Edward Chang, Ph.D. (Ethnic Studies)
Pya Quatterjee, Ph.D. (Women’s Studies)
Jingsong Chen, Ph.D. (Comparative Literature and Foreign Languages)
Lucille Chia, Ph.D. (History)
Kuei Chiu, M.A. (Rivera Library)
Yoshiko T. Hain, M.A. (Comparative Literature and Foreign Languages)
Ginger G. Hsü, Ph.D. (Art History)
René T.A. Lysloff, Ph.D. (Music)
Ethan Nesreddin-Longo, Ph.D. (Music)
Vivian-Lee Nytay, Ph.D. (Religious Studies/Comparative Literature and Foreign Languages)
Lisa Raphael, Ph.D. (Comparative Literature and Foreign Languages)
Parama Roy, Ph.D. (English)
Brian K. Smith, Ph.D. (Religious Studies)
Deborah A Wong, Ph.D. (Music)
Yenna Wu, Ph.D. (Comparative Literature and Foreign Languages)
Yang Ye, Ph.D. (Comparative Literature and Foreign Languages)

Degree Requirements

University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements
The requirements for B.A. degree in Asian Studies are as follows:

East Asian Studies Option
The East Asian Studies option is grounded in courses on China, Japan, and Korea and is supplemented by comparative course work on other Asian societies (including Asian
Americans). Students who choose the East Asian Studies option are required to focus primarily on China, Japan, and Korea and are strongly encouraged to choose a disciplinary focus in either Art, History, History, Comparative Literature and Foreign Languages, or Religious Studies.

1. Lower-division requirements (8 units plus language requirement)
   a) Two years of basic language instruction in either Chinese (CHN 001-
      CHN 002, CHN 004-
      CHN 005, CHN 090 or its equivalents), Japanese (JPN 001-
      JPN 002, JPN 004-JPN 005-
      JPN 006, or JPN 090 or its equivalents), or Korean (KOR 001-KOR 002-
      KOR 003, KOR 004-KOR 005, or KOR 090 or its equivalents)

   b) At least one of the following courses:
      AST 090, AST 030/CHN 030,
      AST 045/AST 045F, AST 045G/AST 045G,
      AST 035, AST 018/AST 018,
      AST 015, AST 005, HIST 030,
      WRLT 029, RLST 005

2. Upper-division requirements (36 units)
   a) At least 28 units from the following courses dealing with China, Japan, and
      Korea:
      AST 190, AST 139/AHS 139,
      AST 140/AHS 140, AST 141/AHS 141,
      AST 143/AHS 143, AST 144/AHS 144,
      AST 130A-AST 130B-CHN 130C,
      CHN 130A-CHN 130B-CHN 130C,
      AST 135/AST 135/AST 135,
      CHN 136/CHN 136/CHN 136,
      CHN 148/CHN 148, CHN 185/CHN 185,
      CHN 150/CHN 150,
      CHN 101A-CHN 101B-CHN 101C,
      CHN 104, CHN 105, CHN 108,
      CHN 110 (E-Z), CHN 115 (E-Z),
      CHN 190,
      HIST 180, HIST 181, HIST 182,
      JPN 101A, JPN 101B, JPN 101C,
      JPN 151/JPN 150, JPN 142, JPN 190,
      RLST 103, RLST 105, RLST 106,
      RLST 108

   b) At least 8 units from the following courses focused comparatively on Asia
      and Asian Americans:
      RLST 101, RLST 106, RLST 108

   c) Senior Thesis: Completion of a senior thesis in the first or second quarter of
      the senior year (This includes a substantial paper based on original research; ideally, primary documents are consulted in the course of conducting the research.)

Note: A maximum of 12 units in East Asian language courses over and above those fulfilling the lower-division prerequisites are allowed in fulfilling the 36-unit requirement.

Comparative Asian Studies Option

The Comparative Asian Studies option is designed for students who wish to pursue a comparative approach to Asian Studies. The option focuses on the historical interactions and cultural similarities and differences among East, Northeast, South, Southeast, West, and Central Asia peoples and the Asian American community. Language prerequisites of the Comparative Asian Studies option can be filled by Chinese, Japanese, or Korean courses or by training in other Asian languages.

1. Lower-division requirements (8 units plus language requirement)
   a) Two years of basic language instruction in any Asian language (This requirement may be fulfilled by language courses currently offered at UCR such as Chinese, Japanese, or Korean, or by courses in other East, Northeast, South, Southeast, West, or Central Asian languages taken at other accredited institutions subject to the approval of the Chair of the Asian Studies Committee.)

   b) At least 8 units from the following courses:
      AHS 015, AST 090, AST 018/AST 018,
      AST 035/CHN 030, AST 045 (E-Z)/
      HIST 045 (E-Z), AST 035/JPN 035,
      ETST 005, HIST 030,
      WRLT 029, RLST 005

2. Upper-division requirements (36 units)
   a) At least 12 units from the following courses:
      AST 190, AST 121/ALT 121,
      AST 131/ALT 131,
      CPTL 141M, ENGL 121,
      ETST 110 (E-Z), ETST 137, ETST 138,
      ETST 150, ETST 136/SOC 136,
      RLST 101

   b) Twenty-four units (24) taken from at least two or more of the following four area groupings:
      ANTH 140-I, AST 121/ALT 121,
      AST 131/ALT 131,
      CPTL 141M, ENGL 121,
      ETST 110 (E-Z), ETST 137, ETST 138,
      ETST 150, ETST 136/SOC 136,
      RLST 101

   c) Senior Thesis: Completion of a senior thesis in the first or second quarter of
      the senior year (This includes a substantial paper based on original research; ideally, primary documents are consulted in the course of conducting the research, and the topic should deal with a comparative theme within Asian Studies.)

Minor

Asian Studies offers a minor which consists of 28 units chosen from the following list.

1. Lower-division requirements (8 units)
   a) AST 030/CHN 030, AST 035/JPN 035
      HIST 045 (E-Z)/AST 045 (E-Z), RLST 005

2. Upper-division requirements (20 units)
   a) ANTH 140-I
      AST 190 (No more than 4 units may be applied to the minor.)
      AST 128/ANTH 128/DNCE 128/
      MUS 128/THA 176
      AST 127/ANTH 176/DNCE 127/
      ETST 172/MUS 127, AST 168/
      MUS 168 (4 units maximum),
      RLST 101, RLST 106, RLST 108

   b) At least 8 units from the following courses:
      AHS 015, AST 090, AST 018/AST 018,
      CHN 130A-CHN 130B-CHN 130C,
      CHN 130A-CHN 130B-CHN 130C,
      AST 135/AST 135/AST 135,
      CHN 136/CHN 136/CHN 136,
      CHN 148/CHN 148, CHN 185/CHN 185,
      CHN 150/CHN 150,
      CHN 101A-CHN 101B-CHN 101C,
      CHN 104, CHN 105, CHN 108,
      CHN 110 (E-Z), CHN 115 (E-Z),
      CHN 190,
      HIST 180, HIST 181, HIST 182,
      JPN 101A, JPN 101B, JPN 101C,
      JPN 151/JPN 150, JPN 142, JPN 190,
      RLST 103, RLST 105, RLST 106,
      RLST 108

   b) At least 8 units from the following courses focused comparatively on Asia
      and Asian Americans:
AST 121/ALT 121, AST 131/ALT 131
AST 130A-AST 130B-AST 130C
CHN 130A-CHN 130B-CHN 130C
AST 135/CHN 135, AST 136/CHN 136,
AST 148/CHN 148, AST 185/CHN 185
AST 142/CHN 142/RLST 142
AST 127/ANTH 176/DNCE 127/
ETST 172/MUS 127
AST 150/JPN 150
CHN 101A-CHN 101B-CHN 101C, CHN 104,
CHN 105, CHN 108, CHN 110 (E-Z),
CHN 115 (E-Z), CHN 190
ETST 150
HIST 180, HIST 181, HIST 182
JPN 101A, JPN 101B, JPN 101C,
JPN 151/AST 151, JPN 142, JPN 190
RLST 101, RLST 103, RLST 105, RLST 108

See Minors under the College of Humanities,
Arts, and Social Sciences in the Undergraduate
Studies section of this catalog for additional
information on minors.

LOWER-DIVISION COURSES

AST 018. Introduction to Writing and Painting in
China. (4)
Lecture, three hours; extra reading, two hours; written
work, one hour. Prerequisite(s): none. A survey of
Chinese calligraphy and painting, focusing on their de-
velopment in history and their practice in Chinese society.
Demonstrations of writing and painting are included.
Cross-listed with AHS 018.

AST 030. Introduction to Chinese
Civilization. (4)
Lecture, two hours; discussion, one hour; extra reading
three hours. Prerequisite(s): none. An introduction to
Chinese civilization from earliest times to the dawn of the
twentieth century. Devotes particular attention to aesthetic
activity and to the relationship between history, culture, and
the arts. Cross-listed with JPN 034.

AST 034. Early Japanese Civilization. (4)
Lecture, three hours; term paper, three hours.
Prerequisite(s): none. An introduction to Japanese civi-
лизation from earliest times to the present. Focuses on the
devotional and aesthetic activities and to the relationship
to history, culture, and the arts. Cross-listed with JPN 034.

AST 035. Modern Japanese Society. (4)
Lecture, three hours; discussion, one hour; Prerequi-
ties(s): none. An introduction to Japanese culture and
society with emphasis on the day-to-day lives of the mod-
ern Japanese people at home, work, and play. Cross-listed
with JPN 035.

AST 040. Masterworks of Chinese Literature. (4)
Lecture, three hours; outside research, three hours.
Prerequisite(s): none. Reading and discussion of selected
great works of Chinese literature (in English translation)
with attention to cultural contexts. Various critical meth-
ods and approaches are used. Cross-listed with CHN 040.

AST 045 (E-Z). Topics in Asian History. (4)
Lecture, three hours; consultation, one hour.
Prerequisite(s): none. An introduction to regional his-
tories and cultures of Asia. E. Premodern China and Japan;
F. Contemporary China; G. India in the Western
Imagination. Cross-listed with HIST 045 (E-Z).

AST 048. Chinese Cinema. (4)
Lecture, two hours; discussion, one hour; screening,
two hours; outside research, one hour. Prerequisite(s): none.
Study of selected films from China and Taiwan with atten-
tion to cultural context. Questions addressed may include
the following: What do we look for in a film? What are the
film’s interrelations with theatre, photography and litera-
ture? How do we understand the film as an art form?
Cross-listed with CHN 048.

AST 090. Special Studies. (1-5)
Individual study to fifteen hours. To be taken with
the consent of the Chair of the Program as a means of
meeting special curricular problems. Course is repeatable.

UPPER-DIVISION COURSES

AST 107. Taoist Traditions. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): AST 030/CHN 030 or upper-
division standing or consent of instructor. A survey of the ancient
mystical and philosophical aspects of Taoism as well as
the living religious tradition, their relationships to each
other, and their expression in Chinese culture and civiliza-
tion. Topics include the Tao Te Ching, the Chuang-tzu,
the Taoist canon, meditation, immortality, alchemy,
and ritual. Cross-listed with CHN 107 and RLST 107.

AST 121. Masterworks of East Asian
Literature. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): upper-division standing or consent of
instructor. An introduction to ancient and modern East
Asian literature with emphasis on some major works of
Cross-listed with ALT 121.

AST 124. Music of Asian America. (4)
Lecture, three hours; music listening, one hour; individual
study two hours. Prerequisite(s): upper-division standing or
consent of instructor. An introduction to musical forms in
the cultural politics of Asian America. Examines expressive
culture as a constitutive site for ethnic identities and emer-
gent political formations. Covers music of Asian immi-
grants and of subsequent generations, including Asian
American jazz and hip-hop. Cross-listed with MUS 124.

AST 127. Music Cultures of Southeast Asia. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): upper-division standing or consent of
instructor. A survey of music, dance, theatre, and ritual in
the Philippines, Indonesia, Malaysia, Thailand, Myanmar
(Burma), Laos, Cambodia, and Vietnam. Designed for the student interested in the performing arts and cultures of
mainland and insular Southeast Asia. No knowledge of music
background is required. Cross-listed with ANTH 176,
DNCE 127, ETST 172, and MUS 127.

AST 128. Performing Arts of Asia. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): upper-division standing or consent of
instructor. A survey of music, dance, theatre, and ritual in four major geographic regions of Asia: Central, East, South
and Southeast. No Western music background is required.
Course is repeatable to a maximum of 8 units. Cross-listed
with ANTH 128, DNCE 128, MUS 128, and THEA 176.

AST 170A-AST 170B-AST 170C.
Chinese Literature in Translation. (4-4-4)
Lecture, three hours; term paper, three hours. Prerequi-
tisite(s): upper-division standing or consent of instructor:
Knowledge of Chinese not required. Lectures and collabora-
tive reading of representative works in English and translation.
130A: Poetry, historical records, essays, drama, and fiction
from Early Times to the Yuan Dynasty (1368 A.D.); 130B:
Drama and fiction from the fourteenth century to the end of
the Qing Dynasty (1911 A.D.); 130C: Twentieth century
poetry and fiction. Can be taken out of sequence. Cross-list-
ed with CHN 130A-CHN 130B-CHN 130C.

AST 131. Women in Asian Literature. (4)
Lecture, three hours; individual study three hours.
Prerequisite(s): upper-division standing or consent of
instructor. This course is a cross-cultural study of Asian
women through the analysis of literary works including
drama, fiction, and diaries in both classical and modern
literature in China, Japan, Korea, and India. All readings
are in English translations. Cross-listed with AHS 131.

AST 135. Great Novels of China. (4)
Lecture, three hours; extra reading three hours.
Prerequisite(s): upper-division standing or consent of
instructor. An examination of the social, philosophical, and aes-
thetic features in major Ming-Qing novels through critical
reading and analysis of literature in translation. No knowl-
edge of Chinese required. Cross-listed with CHN 135.

AST 136. Family and Gender in the Chinese
Short Story. (4)
Lecture, three hours; extra reading three hours.
Prerequisite(s): upper-division standing or consent of
instructor. A survey of family and gender roles in short
fiction from Earliest Times to the Yuan Dynasty (tenth
century A.D.), with concentration on rural bronze, mor-
tuary art, and Buddhist art. Cross-listed with AHS 139.

AST 140. Chinese Painting of the Song and Yuan
Dynasties. (4)
Lecture, three hours; extra reading three hours.
Prerequisite(s): CHN 015 or upper-division standing or
consent of instructor. A cross-cultural comparison of Chinese
art from the Neolithic period to the end of the Tang Dynasty (tenth
century A.D.), with concentration on rural bronze, mor-
tuary art, and Buddhist art. Cross-listed with AHS 140.

AST 141. Chinese Painting of the Ming and
Qing Dynasties. (4)
Lecture, three hours; extra reading three hours.
Prerequisite(s): CHN 015 or equivalent or upper-division
standing or consent of instructor. A survey of Chinese art from
the fourteenth to the eighteenth century. Investigates love, marriage, family, gender dynamics, and the representation of women
in Chinese literature. No knowledge of Chinese required.
Cross-listed with CHN 140.

AST 142. Chuang-tzu. (4)
Lecture, one hour; discussion, two hours; outside
research, one hour; extra reading, one hour; term paper,
one hour. Prerequisite(s): ETST 065 or ETST 065H or
AST 107/CHN 107/RLST 107 or consent of instructor. An

AST 143. Text and Image in Chinese Painting. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. Major developments in the pictorial art of prehistoric times to the nineteenth century. Examples used to place the Chinese house within the general history of Chinese architecture and within its social and cultural context. Cross-listed with AHS 144.

AST 147. The Japanese House. (4)
Lecture; three hours; individual study; three hours.
Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. History of the traditional Japanese house from prehistoric times to the nineteenth century. Examples used to place the Japanese house within the general history of Japanese architecture and within its social and cultural context. Cross-listed with AHS 146.

AST 148. Chinese Poetry and Poetics in Translation. (4)
Lecture, two hours; discussion, one hour; extra reading, three hours.
Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. Examination of traditional Chinese poetry through the study of selected major texts, emphasizing forms, themes, and Chinese poetics in its close relation to the development of Chinese literature. Classes are conducted in English. Cross-listed with CHN 148.

AST 150. In Women’s Hands: Reading Japanese Women Writers. (4)
Lecture, three hours; term paper, three hours.
Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. Examines major works of Japanese women writers from Heian (ninth century) to contemporary, focusing on themes, genres, representations of gender, ideas of love and romance, and feminine aesthetics. Readings include fiction, poetry, essays, and drama, with the main emphasis on fictional writing. Classes are conducted in English. Cross-listed with JPN 150.

AST 151. Early Japanese Literature. (4)
Lecture, two hours; discussion, one hour; term paper, three hours.
Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. An in-depth introduction to early Japanese literature. Focuses on fiction, from early poem tales and court romances to warrior tales and stories of the floating world. Careful attention is given to the works’ historical and cultural backgrounds and visual and artistic dimensions. All works are read in English translation. Cross-listed with JPN 151.

AST 152 (E-Z). Themes in Modern Japanese Literature. (4)
Lecture, two hours; discussion, one hour; term paper, three hours.
Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. An introduction to modern Japanese literature in translation, as seen through the lens of a particular theme or issue. All materials read or viewed in English. E. The End of the World in Japanese Literature; F. The Mask in Japanese Fiction; G. Love and Death. Cross-listed with JPN 152 (E-Z).

AST 168. Javanese Gamelan Ensemble: Beginning. (2)
Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. Study and performance of the Central Javanese gamelan, consisting mainly of gongs and gong-chime instruments. Readings and discussions focus on Javanese culture. Normally graded Satisfactory (S) or No Credit (NC) only, but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Cross-listed with MUS 168.

AST 169. Taiko Ensemble. (1)
Studio, two hours. Prerequisite(s): upper-division standing or consent of instructor. Study and performance of Japanese drumming. Normally graded Satisfactory (S) or No Credit (NC) only, but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Cross-listed with MUS 169.

AST 184. Japanese Film and Visual Culture. (4)
Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. Studies popular visual culture in Japan primarily through film, from the early masters to contemporary directors. Additional material may be drawn from fields such as theatre, television, visual art, architecture, and illustrated fiction. All materials read or viewed in English. Course is repeatable to a maximum of 12 units. Cross-listed with CPE 184, PVC 184, and JPN 184.

AST 185. New Chinese Cinema. (4)
Lecture, two hours; discussion, one hour; screening, two hours; extra reading, one hour.
Prerequisite(s): AHS 015 or upper-division standing or consent of instructor. A study of representative films from the People’s Republic of China, with a focus on those made during the last decade. Conducted in English; films to be shown from video cassettes are mostly with English subtitles. Cross-listed with CHN 185.

AST 190. Special Studies. (1-5)
Individual study, three to fifteen hours. Prerequisite(s): upper-division standing or consent of instructor. To be taken with the consent of the Chair of the Program as a means of meeting special curricular problems. Course is repeatable.

AST 195. Senior Thesis. (4)
Thesis, three to twelve hours.
Prerequisite(s): consent of instructor and senior standing. Preparation of a substantial paper based on original research. The student works independently with a faculty member. Course is repeatable to a maximum of 12 units.

BIOCHEMISTRY

Subject abbreviation: BCH

Stephen R. Spindler, Ph.D., Chair
Department Office, 1491 Boyce Hall
Graduate Program (909) 787-5093
Undergraduate Program (909) 787-4229
http://biochemistry.ucr.edu
MAJOR

Biochemistry holds a central position in the life sciences. At the interface between Biology and Chemistry, it deals with the molecular structures and reactions essential to all life processes. A degree in Biochemistry prepares students for a broad range of career possibilities in research, industry, and the health professions. In the past decade, a third of our graduates have entered professional schools (medical, dental, optometry, pharmacy, osteopathy, and veterinary), a third have entered M.S. or Ph.D. graduate programs (in Biochemistry, Physiology, Public Health, Pathology, Molecular Biology, and Virology), and a third have gone to work (in the pharmaceutical and biotechnology industries, clinical and research laboratories, and teaching).

The course work required for the Biochemistry degree is rigorous and comprehensive, and gives students a solid grounding on which to base their career goals. There are two emphasis areas within the Biochemistry major, Chemistry and Biology. The choice of emphasis depends on the career plans of the student, and determines from which course groupings upper-division electives are selected to complete the major requirements. The Biology emphasis is geared toward students interested in the health professions, while the Chemistry emphasis is generally chosen by students interested in pharmacy, forensics, or biophysical sciences. The program focuses on the development of laboratory and critical thinking skills, and hands-on laboratory experience. In addition, participation in an independent research project (BCH 197) or research tutorial (BCH 190), carried out under the supervision of a faculty member, is possible. Internships in industry (BCH 190-I) are also available, and often lead to valuable job experience and employment opportunities.

The department offers both Bachelor of Arts and Bachelor of Science degrees. The major and emphasis requirements are the same for both, and most students choose the B.S. degree. The B.A. degree requires 12 additional units of Humanities and Social Sciences courses, and 16 units or a course 4 equivalency level of a foreign language (see College Breadth Requirements).

Transfer Students

Transfer students majoring in Biochemistry need to complete at least three of the following full-year sequences, which must include first-year calculus and general chemistry:

1. First-year calculus, equivalent to MATH 009A-MATH 009B-MATH 009C
2. General chemistry, equivalent to CHEM 001A-CHEM 001B-CHEM 001C
3. Organic chemistry (must be completed with a minimum grade of "B" in each term)
4. General biology, equivalent to BIOL 005A and BIOL 005B (and BIOL 005C, if available)
5. General physics (calculus-based) equivalent to PHYS 002A, PHYS 002B, PHYS 002C, PHYS 040A, PHYS 040B, PHYS 040C

Students must have a minimum grade point average of 2.70 in transferable college courses.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Natural and Agricultural Sciences in the Undergraduate Studies Section, for requirements that students must satisfy.

Some of the following requirements for the major may also fulfill some of the College’s breadth requirements. Consult with a department advisor for course planning.

Major Requirements

The major requirements and the emphasis requirements are the same for the B.A. and the B.S. degree in Biochemistry. Choose one emphasis. All upper-division courses presume completion of the life sciences core curriculum.

1. Lower-division requirements (51 units)
   a) BIOL 005A, BIOL 005B, BIOL 005C
   b) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 021A-PHYS 021B-PHYS 021C
   c) CHEM 001A-CHEM 001B-CHEM 001C
   d) MATH 009A-MATH 009B-MATH 009C
2. Statistics requirement (2 or 5 units): One course from STAT 020, STAT 100A, or STAT 105
3. Upper-division requirements (46-49 units)
   a) BIOL 102
   b) CHEM 109 or CHEM 110A; CHEM 112A-CHEM 112B-CHEM 112C
   c) BCH 102, BCH 110A-BCH 110B-BCH 110C, BCH 184
   d) Two courses from BCH 120/BMSC 120, BCH 153/BIOL 153/BPSC 153, BCH 162, BCH 183, BCH 185/BPSC 185, BCH 210, BCH 211, BCH 212, BCH 241/CHM 241
4. BCH 190 or BCH 197 are available as elective courses to juniors who have completed BCH 102 and to seniors. No more than 9 units of courses numbered 190-199 may be counted towards the major.

Chemistry Emphasis

a) Lower-division requirements (5 units): CHEM 005
b) Upper-division requirements (8 units): two courses from CHEM 110B, CHEM 113, CHEM 125, CHEM 150A-CHEM 150B, CHEM 166 (BCH 241/CHM 241) and other graduate courses may be substituted by students with a GPA of 3.00 or better with permission of the instructor and the faculty advisor.

Biology Emphasis

a) Upper-division requirements (9-15 units). Choose three biological science courses from the following:

   (1) BCH 120/BMSC 120, BCH 153/BIOL 153/BPSC 153, BCH 162, BCH 183, BCH 185, BCH 210, BCH 211, BCH 212, BCH 241/CHM 241
   (2) BIOL 105, BIOL 108, BIOL 111, BIOL 114, BIOL 117, BIOL 121A/MCBL 121A, BIOL 121B/MCBL 121B, BIOL 121C/MCBL 121C, BIOL 128/NRSC 128, BIOL 150/ENTX 150, BIOL 151, BIOL 155/BPSC 155, BIOL 157, BIOL 159/NEM 159, BIOL 160, BIOL 161A, BIOL 161B, BIOL 166, BIOL 167, BIOL 171, BIOL 173/ENTM 173, BIOL 175, BIOL 176
   (3) BIOL 130/BPSC 130, BIOL 132/BPSC 132, BIOL 143/BPSC 143, BIOL 155/BPSC 155, BPSC 134, BPSC 135, BPSC 148
   (4) BIOL 100/ENTM 100, BIOL 173/ENTM 173, ENTM 128
   (5) NRSC 106, NRSC 116, NRSC 120/PSYC 120, NRSC 120L/PSYC 120L, NRSC 124/PSYC 124, NRSC 125/PSYC 125, NRSC 169
   (6) BIOL 150/ENTX 150, ENTX 101

Graduate and upper-division courses can be substituted with permission of the instructor and the faculty advisor. Graduate courses require a GPA of 3.0 or greater in the sciences.
Students should be aware that CHEM 005 is often a requirement for admission to professional schools.

**Note:** A maximum of 12 units of 190-199 courses may be counted toward the 180 unit graduation requirement. All courses used towards the Biochemistry major requirements must be taken for letter grades.

### Sample Programs

Two of the many possible course programs are shown below; the outlined program is applicable for both the B.A. and B.S. degree programs. ENGL 001A-ENGL 001B-ENGL 001C should be completed as early as possible in the student's career. BCH 190 (Special Studies) or BCH 197 (Research for Undergraduate Students) is completed during the junior or senior year and may be arranged through the Undergraduate Student Advisor.

### Bachelor of Science

#### Chemistry Emphasis

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<th>Freshman Year</th>
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### Biology Emphasis

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### Graduate Program

The Department of Biochemistry offers a graduate program leading to the master's or Ph.D. degree in Biochemistry and Molecular Biology. This program emphasizes basic biochemistry with research specializations in the areas of molecular biology, physical biochemistry, molecular endocrinology, plant biochemistry, and molecular biology, signal transduction, and biomedical research. It is designed for students who are planning a career of research and teaching in biochemistry at colleges and universities or who wish to engage in biochemical investigations of fundamental or applied nature in private, governmental, or commercial laboratories.

Students who have completed a bachelor's degree in physical, biological, chemical, or agricultural sciences are invited to apply to the program. Regardless of the area of their major for the baccalaureate degree, students should have taken the following courses prior to beginning graduate study in biochemistry or should plan to make up deficiencies soon after entering graduate school: one year of calculus, one year of general physics, one year of organic chemistry, an introductory course in physical chemistry and at least two courses in biology at the upper-division level, including genetics.

Students applying to the graduate program in Biochemistry and Molecular Biology should arrange to take the Graduate Record Examination General Test in time for their scores to be submitted with their application.

### Doctoral Degree

Students' course requirements are determined in consultation with a three member advisory committee appointed for them upon their arrival. Prior to enrollment, entering students are given a written comprehensive evaluation examination in biochemistry. The results of this examination are only used for advising and placement; a passing score is not a requirement for admission or enrollment. Based on the student's interests, previous training, and performance on the comprehensive evaluation examination, the advisory committee suggests an individualized course program involving classes in biochemistry and subsidiary fields of study. These subsidiary fields may be chosen from any of the physical, biological, or agricultural sciences. Although an adequate course preparation is a requisite part of the training program, the department encourages early involvement of the students in research directed toward their dissertations.

Students who are candidates for the Ph.D. degree normally enter the graduate program in the fall quarter at the beginning of a new academic year and begin their training according to the plan suggested by their indi-
individual advisory committees. At the end of the first quarter, the students select their major professors and are ready to initiate a research project. At the end of the first year, the students submit a written report describing their research efforts and relating them to current biochemical work in related areas. After the second year, students take a comprehensive written qualifying examination, then submit and orally defend a research report in which they describe the research they have performed thus far and develop a plan for their complete dissertation research project. This fulfills the Graduate Division’s requirement for an oral qualifying examination; students completing these requirements are advanced to candidacy for the Ph.D. degree. Following completion of their research, a written dissertation is submitted, and they conclude their studies with an oral defense of the dissertation. As part of the program, each student is required to serve at least two quarters as a teaching assistant.

The normative time to the Ph.D. degree is 15 quarters.

**Master’s Degree**

In addition to the Ph.D. program, the department offers two plans for the master’s degree (Plan I — Thesis; Plan II — Comprehensive Examination). Both plans require completion of at least 36 course units; for Plan I, a maximum of 12 units may be for thesis research.

### LOWER-DIVISION COURSES

**BCH 100.** Introduction to Nutrition. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. Introduction to the biological basis of human nutrition in the context of plant-animal-microorganism cycles and the characteristics of different food classes. The effects of nutritional needs, food availability, and the expanding human population are discussed. Students record and evaluate their own diet. Food classes. The effects of nutritional needs, food availability, and the expanding human population are discussed. Students record and evaluate their own diet.

**BCH 097.** Research Tutorial in Biochemistry. (1)
Laboratory, three hours. Prerequisite(s): BCH 102, BCH 162 or equivalents; BCH 184 (may be repeated for a total of 12 units). Directed research and preparation of written report. Literature review and tutorial in select modern biochemical topics. Course is repeatable.

### UPPER-DIVISION COURSES

**BCH 102.** Introductory Biochemistry Laboratory. (4)
Lecture, two hours; laboratory, two 4-hour laboratories. Prerequisite(s): BCH 100 with a grade of “C-” or better or BCH 110A with a grade of “C+” or better or consent of instructor. Introduction to biochemistry laboratory techniques including spectrophotometry, pH and buffer preparation, methods of protein determination, principles and uses of chromatography, enzyme assay, theory and measurement of radioisotopes (liquid scintillation counting), SDS-gel electrophoresis, theory of centrifugation. Most experiments include a quantitative component" upon which the student’s performance is graded.

**BCH 110A-BCH 110B-BCH 110C.** General Biochemistry. (4-4-4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 100 or BCH 110A with a grade of “C-” or better or BCH 110A with a grade of “C-” or better or consent of instructor. Introduction to biochemistry laboratory techniques including spectrophotometry, pH and buffer preparation, methods of protein determination, principles and uses of chromatography, enzyme assay, theory and measurement of radioisotopes (liquid scintillation counting), SDS-gel electrophoresis, theory of centrifugation. Most experiments include a quantitative component" upon which the student’s performance is graded.

**BCH 120.** General Biochemistry Related to Biomedical Sciences. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 100 with a grade of “C-” or better or BCH 110A-BCH 110B with grades of “C-” or better or consent of instructor. Lectures on biochemical and molecular aspects of modern endocrinology, nutrition, metabolic diseases, and blood chemistry. Emphasis is on relation of the above topics to medicine. The discussion sections are used for presentations on original medical problems. Although the curricula are designed specifically for the curriculum of the Biomedical Sciences Program, it may be appropriate for students in other departments. Cross-listed with BMSC 120. Henry, Luben, Norman

**BCH 153.** Plant Biotechnology. (4) F,Odd Years
Lecture, one hour; discussion, one hour; laboratory, six hours. Prerequisite(s): BCH 110C or BIOL 107A; upper division standing; consent of instructor. A study of modern techniques in plant genome modification. Topics include nuclear acid cloning and sequencing, plant tissue culture, genetic transformation, controlled-environment plant growth, gene mapping, and germplasm collections. Also explores the history of plant biotechnology: economic, agricultural, nutritional, medical, and societal relevance; and regulatory issues. Cross-listed with BIOL 153 and BPS 153. Credit is awarded for only one of BCH 153/BIOL 153/BPS 153 or BIOL 109. Close

**BCH 162.** Biochemistry and Molecular Biology Laboratory. (5)
Lecture, one hour; discussion, one hour; laboratory, two 4.5-hour laboratories. Prerequisite(s): BCH 102, BCH 110A-BCH 110B-BCH 110C all with grades of “C+” or better (BCH 110C may be taken concurrently). Consent of instructor. Purification, quantitation, and analysis of DNA, RNA, protein, and lipid. Molecular techniques include DNA cloning, in situ hybridization, restriction mapping, PCR, and DNA sequencing. Biochemical techniques include in vitro transcription and translation, immunohistochemistry, phase extraction, affinity chromatography, and gel shift assays.

**BCH 183.** Plant Biochemistry. (3)
Lecture, three hours. Prerequisite(s): BCH 110A-BCH 110B or BCH 100. The course is designed for the student interested in plant biochemistry who wishes to become informed about biochemical structures, systems and metabolic pathways which are unique to plants; for example, photosynthesis, nitrogen fixation, cell walls, and seed development and germination.

**BCH 184.** Topics in Physical Biochemistry. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 100 with a grade of “C-” or better or BCH 110A with a grade of “C-” or better and CHEM 112A-CHEM 112B-CHEM 112C, and CHEM 109 or CHEM 110A or consent of instructor. Lectures on the application of spectroscopy, imaging, and other physical methods in biochemistry including study of macromolecular structure, nuclear acid-protein interactions, subcellular structures, bioenergetics, mechanisms of enzymatic catalysis, enzyme kinetics, and metabolism. Dunn, Roberts

**BCH 185.** Molecular Evolution. (4)
Lecture, two hours; discussion, two hours. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 108 recommended. Explores the evolution of genes, proteins, and genomes at the molecular level. The focus is on the processes that drive molecular evolutionary change. Attention is also given to the analysis of molecular data within the framework of evolutionary theory. Cross-listed with BPS 185. Clegg, Duqaiczyk

**BCH 190.** Special Studies. (2-4)
Individual study; six to sixteen hours. Prerequisite(s): upper-division standing and consent of instructor. Literature review and tutorial in select modern biochemical topics. Course is repeatable.

**BCH 197.** Research for Undergraduate Students. (1-4)
Prerequisite(s): junior status and consent of the instructor. Directed research and preparation of written report. Course is repeatable.

**BCH 198.** Internship in Biochemistry. (1-12)
Internship, three to thirty-six hours. Prerequisite(s): BCH 102, consent of instructor, upper-division standing. An internship to provide students with on-the-job biochemical experience in government, industrial or clinical laboratories. Each individual project must be approved by the Biochemistry Department and the laboratory director where the internship is to be carried out. A written report is required. Graded Satisfactory (S) or No Credit (NC). May be repeated for a total of 12 units. Henry

### GRADUATE COURSES

**BCH 210.** Biochemistry of Macromolecules. (4)
Lecture, four hours. Prerequisite(s): BCH 110A-BCH 110B-BCH 110C or equivalents; BCH 184 may be taken concurrently; CHEM 105; graduate standing or consent of instructor. Discussion of recent advances in the knowledge of the molecular architecture of proteins and...
nucleic acids, especially with respect to new experimental approaches for analyzing their structure and function. Chemistry of the active site of enzymes. Johnson, Wilkens

BCH 211. Molecular Biology (3)
Lecture, three hours. Prerequisite(s): BCH 110A-BCH 110B-BCH 110C or equivalents; graduate standing or consent of instructor. Advanced topics in molecular biology of the biosynthesis and regulation of DNA, RNA, and proteins. Some topics covered include the following: molecular anatomy of genes and chromosomes; DNA repair and recombination; regulation of genes in the cell cycle; telomerase; RNA processing and splicing; RNA editing; regulation of normal genes and oncogenes; chaperones and protein targeting. Gallie, Traugh

BCH 212. Signal Transduction and Biochemical Regulation. (3)
Lecture, two hours; discussion, one hour. Prerequisite(s): BCH 110A-BCH 110B-BCH 110C or equivalents; graduate standing or consent of instructor. Advanced topics in signal transduction and biochemical regulation. Some topics covered include the following: protein kinases and protein phosphorylation; phosphatases and their role in regulation; function of phosphorylation events in regulation of metabolism and growth; calcium and other ion channels as signal transduction mechanisms, steroid hormone receptors super family; immune system signal transduction events. Luben, Traugh

BCH 230 (E-Z).
Advanced Topics in Biochemistry (2)
Lecture, one hour; discussion, one hour; outside reading, two to four hours. Prerequisite(s): BCH 100 or BCH 110A-BCH 110B or consent of instructor. A series of courses which may be entered at any quarter. Each course considers the most recent advances in the particular field by analysis of the recent literature. E. Recombinant DNA; F. Kinetics of Enzyme-Catalyzed Reactions; G. Regulation of Protein Synthesis; H. The Biochemistry of Transport and Membrane Function; J. Regulation of Primary Metabolism; K. Regulation of Eukaryotic Gene Expression; L. Biochemical Control Mechanisms; M. Mechanism of Steroid Hormone Action; N. Bioenergetics; O. Macromolecular Architecture; P. Steroid Metabolism; Q. Tumor Suppressor and Cell Cycle Regulation; R. Signal Transduction; S. Plant Defense Mechanisms; T. Walling Structure and Function of Transport ATPase. Wilkens

BCH 241. Bioorganic Chemistry. (3)
Lecture, three hours. Prerequisite(s): BCH 100 or BCH 110A-BCH 110B or consent of instructor. BCH 184 or CHEM 110B; CHEM 112A-CHEM 112B-CHEM 112C; graduate standing or consent of instructor. Biochemical reactions discussed from a chemical standpoint, including reactions associated with bioenergetics, biosynthesis, and enzyme catalysis. Emphasis on reaction mechanisms. Cross-listed with CHEM 241. Dunn, Morton

BCH 250. Oral Presentations in Biochemistry. (2)
Seminar, one hour; discussion, one hour. Prerequisite(s): graduate standing. Training and practice in the presentation of biochemical concepts in both short and long seminar formats, using blackboard, overhead projector, and slides. Presentations are immediately and critically evaluated by both faculty and staff. Limited to 10 students.

BCH 251. Graduate Seminar in Biochemistry. (2)
Seminar, one hour; discussion, one hour. Prerequisite(s): BCH 250. Oral reports by graduate students on current research topics in biochemistry. Spindler in charge

BCH 252. General Seminar in Biochemistry. (1)
Seminar, one hour. Prerequisite(s): graduate standing. Oral reports by faculty, graduate students, and visiting scholars on current research topics in biochemistry. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Spindler in charge

BCH 257. Graduate Seminar in Cell, Molecular, and Developmental Biology. (1)
Seminar, one hour. Prerequisite(s): graduate standing. Lectures by visiting scholars on current research in cell, molecular, and developmental biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BIOL 257, BMSC 257, PIPM 257, ENMT 257, EXTX 257, NEM 257, NSRC 257, and PLPA 257.

BCH 261. Colloquium in Recombinant DNA. (1)
Seminar, one hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports by visiting scholars, faculty and students on current research topics in recombinant DNA. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BIOL 261, BMSC 261, ENMT 261, and PLPA 261. Dugaiczyk

BCH 264. Seminar-Tutorial in Physical Biochemistry (2)
Seminar, one hour; discussion, one hour. Prerequisite(s): BCH 210 or consent of instructor. Oral reports and discussions by visiting scholars and faculty on current research topics in the area of physical biochemistry.

BCH 287. Colloquium in Neuroscience. (1)
Colloquium, one hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports on current research topics in neuroscience with presentations by visiting scholars, faculty, and students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BIOL 287, BMSC 287, CHEM 287, NSRC 287, and PSYC 287. Hatton in charge.

BCH 289. Special Topics in Neuroscience. (2)
Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) vary each time course offered. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BIOL 289, BMSC 289, CHEM 289, ENMT 289, NSRC 289, and PSYC 289. Hatton in charge.

BCH 290. Directed Studies. (1-4)
Outside research, 3 to 12 hours. Prerequisite(s): graduate standing in Biochemistry; consent of instructor and graduate advisor. Experimental or literature studies on specifically selected topics undertaken under the direction of a staff member. With prior approval of the graduate advisor, M.S. students may be assigned a letter grade; other students are graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BCH 291. Individual Study in Biochemistry. (1-6)
Prerequisite(s): graduate status in Biochemistry or consent of instructor. A program of studies designed to advise and assist candidates who are preparing for examinations. Open to M.S. and Ph.D. candidates; does not count toward the unit requirement for the M.S. degree. Graded Satisfactory (S) or No Credit (NC). Repeatable up to 6 units for pre-Master’s students and up to 12 units for Ph.D. students prior to successful completion of the qualifying examination.

BCH 297. Directed Research. (1-6)
Prerequisite(s): graduate status in Biochemistry or consent of instructor. Directed research in preparation for dissertation projects performed prior to advancement to candidacy. Graded Satisfactory (S) or No Credit (NC).

BCH 299. Research for Thesis or Dissertation. (1-12)
Prerequisite(s): graduate status in Biochemistry or consent of instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PROFESSIONAL COURSES

BCH 301. Teaching of Biochemistry at the College Level. (3)
Seminar, one hour. Prerequisite(s): graduate standing and consent of instructor. A program of weekly meetings and individual formative evaluations required of new biochemistry teaching assistants. Covers instructional methods and classroom/section activities most suitable for teaching Biochemistry. Conducted by the TA Development Program. Credit not applicable to graduate unit requirements.
Because the core curriculum occupies most of the first two years of study, Biological Sciences majors need not select their area of specialization (track) until the beginning of the junior year. However, students are encouraged to identify a track sooner if they so desire.

Transfer Students

Transfer students majoring in Biological Sciences need to complete at least three of the following full-year sequences, which must include general chemistry.

1. General chemistry, equivalent to CHEM 001A-CHEM 001B-CHEM 001C
2. First-year calculus, equivalent to MATH 009A-MATH 009B
3. General biology, equivalent to BIOL 005A and BIOL 005B (and BIOL 005C, if available)
4. General physics (calculus-based) equivalent to PHYS 002A, PHYS 002B, PHYS 002C or PHYS 040A, PHYS 040B, PHYS 040C

Students must have a minimum grade point average of 2.70 in transferable college courses.

Degree Requirements

University Requirements

See the Undergraduate Studies Section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Natural and Agricultural Sciences in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

Some of the following requirements for the major may also fulfill the College’s breadth requirements. Consult with a department advisor for program planning.

The major requirements for the B.S. in Biological Sciences are as follows:

1. Biological Sciences core requirements (65-69 units)
   - Students must complete all required courses with a grade of "C" or better and with a cumulative GPA in the core courses of at least 2.0. Grades of “D” or “F” in two core courses, either separate courses or repetitions of the same course, are grounds for discontinuation from the major.
   - a) BIOL 005A, BIOL 005B, BIOL 005C
   - b) CHEM 001A-CHEM 001B-CHEM 001C, CHEM 112A-CHEM 112B-CHEM 112C
   - c) MATH 009A-MATH 009B
   - d) PHYS 002A-PHYS 002B-PHYS 002C, PHYS 021A-PHYS 021B-PHYS 021C
   - e) STAT 020 or STAT 100A or STAT 105
   - f) BCH 100 or BCH 110A

2. As specified in the individual tracks, at least 36 upper division units for the major and 16 units of substantive course work related to the major. Courses in Statistics and Biochemistry taken as part of the core may be included.

A student is subject to discontinuation from the major whenever the GPA in upper-division coursework is below 2.0. Students finding themselves in this circumstance must meet with an advisor.

Biology Track

The biology track provides up-to-date preparation for postgraduate study and careers in health science, teaching and research. These options require understanding and integration of the different levels of biological organization: cellular, molecular, development, structure and function of organisms, ecology, and population. An overview of processes at all these levels is presented in the introductory courses (BIOL 005A, BIOL 005B, BIOL 005C), and emphasis is placed on the unifying principles of the discipline.

The upper-division courses are more specialized and provide in-depth examination of specific subfields of biology. From a list of courses in each area, students select three upper-division courses in cellular/molecular biology, three courses in the structure and function of organisms, and two courses in a subfield with the following integrated and overlapping topics: ecology, evolution, systematics, and behavior. Hands-on learning is encouraged so that students can participate rather than just observe science in this age of technology. Among the upper-division biology courses, there must be at least two courses that have a laboratory/field component.

Students in this track also select two courses from a number of options in computer science and statistics. Statistics is needed to plan and carry out experiments, read and understand scientific literature, and interpret data in medicine and other fields of science. Computers facilitate communication and data processing and storage, and computer technology is now an integral part of modern life. The biology track provides a foundation in the main subfields of biology and thus prepares students for more specialized study before and after graduation. Courses in this track enable students to test their interest and aptitude, so that further specialization and career choices are based on information and experience. Students may decide to transfer to another more specialized track or major, or continue
in the biology track, taking additional course work to strengthen areas of interest.

Additional upper-division courses may be taken in any of the required fields of the track, and a list of elective biology courses is provided below.

1. Upper-division requirements (at least 36 units from the following, including two courses with laboratory or field component (indicated by *))
   a) Molecular/Cellular (minimum of one course from each category)
      (1) BCH 100 or BCH 110A-BCH 110B
      (2) BIOL 102 or BIOL 115
      (3) BIOL 107A or BCH 110C, BIOL 111 or
          BIOL 113 or BIOL 114.
      BIOL 128/NRSC 120, BPSC 155/
      BIOL 155
   b) Functional Biology of Organisms
      (minimum of two courses with lecture component)
      BIOL 121A/MCBL 121A, BIOL 121B/
      MCBL 121B, BIOL 121L/MCBL 121L*,
      BIOL 151*, BIOL 157*, BIOL 161A*,
      BIOL 161B*, BIOL 167*, BIOL 171*,
      BIOL 172, BIOL 175*, BIOL 175L*,
      BIOL 176, BIOL 176L*, BIOL 177,
      BPSC 130/BIOL 130*, BPSC 132/BIOL 132*,
      BPSC 135/BIOL 135*, BPSC 143/
      BIOL 143*, ENTM 100/BIO 100*,
      ENTM 162/BIOL 162, ENTM 173/
      BIOL 173*, NEM 159/BIOL 159,
      NRSC 169*, PLPA 134/BIOL 134,
      PLPA 134L/BIOL 134L*
   c) Ecology/Evolution/Systematics/Behavior
      (minimum of two courses)
      BIOL 105, BIOL 108, BIOL 117 or
      ENTM 127/BIOL 127, BIOL 118*,
      BIOL 160, BIOL 160L*, BIOL 163*,
      BPSC 185/BCH 185, ENTM 112/
      BPSC 112/BIOL 112
   d) Additional Elective Courses
      BIOL 107B, BIOL 109*, BIOL 110,
      BIOL 168, BIOL 185 (E-Z), BIOL 191,
      ENTX 150/BIOL 150
   2. Statistics/Computer Science requirement
      (two courses)
      CS 010, CS 012, CS 014, CS 061,
      CS 120A/EE 120A, CS 143/EE 143,
      STAT 100A, STAT 100B, STAT 120A,
      STAT 120B
   3. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52. Eight of these units may be in any of the science colleges or additional lower-division science requirements for the teaching credential (advisor's approval required).

**Cell, Molecular, and Developmental Biology Track**

Cell, Molecular, and Developmental Biology is an important subdiscipline in the Biological Sciences. Many basic biological, medical, and agricultural breakthroughs have been made in this area during the past 20 years and the discipline continues to grow and flourish. This track is designed to build on the strong scientific base provided by the core curriculum and offers students a comprehensive understanding of the field through lecture, laboratory, and seminar courses. Students will then build on this background by taking at least one upper-division laboratory course which will acquaint them with the basic techniques used in this field, introduce them to experimental design in the laboratory, and teach them how to interpret laboratory data. Students will build depth in Cell, Molecular, and Developmental Biology by taking additional upper-division lecture courses from a diverse menu that may be tailored to suit each student's interests. Students add breadth to their basic science training by completing additional courses.

Students completing the track will be familiar with how scientific questions are asked and answered in Cell, Molecular, and Developmental Biology. Training in Cell, Molecular, and Developmental Biology will prepare students for numerous educational opportunities upon graduation including medical, dental, optometry, veterinary, and graduate school. In addition, numerous positions are available in teaching (for secondary level see Biology track), business, biotechnology, forensics, law, biomedical and basic research, agriculture, and government for graduates with expertise in Cell, Molecular, and Developmental Biology.

1. Upper-division requirements (must include at least one laboratory course (indicated by *) from either category)
   a) Required courses
      (1) BCH 110A-BCH 110B (recommended) or BIOL 100
      (2) BIOL 102 or BIOL 115, BIOL 107A or
          BCH 110C, BIOL 111 or
          BIOL 114 or
          BIOL 128/NRSC 120, BPSC 155/
          BPSC 153/BCH 153/BIOL 153*,
          BIOL 155/BIOL 155, BPSC 165/BIOL 165,
          CHE 124, CHE 124L*, CHE 140*,
          ENTX 101, ENTX 150/BIOL 150,
          NRSC 116, NRSC 120/PSYC 120,
          NRSC 120L/PSYC 120L*,
          NRSC 125/PSYC 125, HNPG 024
   b) Additional requirements (a minimum of 20 units from the following list)
      (1) BCH 102*, BCH 120/BIOL 120,
          BCH 162*, BCH 183, BCH 184,
          BIOL 107B, BIOL 109*, BIOL 110,
          BIOL 121A/MCBL 121A, BIOL 121B/
          MCBL 121B, BIOL 121L/MCBL 121L*,
          BIOL 128/NRSC 128, BIOL 167* or
          NRSC 169* [whichever was not used to
          satisfy 1.a) above]. BIOL 185G,
          BIOL 191, BPSC 143/BIOL 143*,
          BPSC 148, BPSC 153/BCH 153/
          BIOL 153*, BIOL 155/BIOL 155,
          BPSC 165/BIOL 165, CHE 124,
          CHE 124L*, CHE 140*, ENTX 101,
          ENTX 150/BIOL 150, NRSC 116,
          NRSC 120/PSYC 120, NRSC 120L/PSYC 120L*,
          NRSC 125/PSYC 125, HNPG 024

2. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52. Must include at least 8 units not listed above.

**Conservation Biology Track**

Conservation biology is a new scientific discipline that seeks to understand the consequences of the rapid loss of Earth's diversity of life and to preserve biodiversity. Conservation biology is a multidisciplinary science that applies principles of ecology, population genetics, evolutionary biology, and other sciences to solve problems related to the loss of biodiversity.

The emergence of conservation biology stems from the recognition that Earth's ecological systems face critical problems from rapid growth of human populations and per capita resource consumption. A major focus of conservation biology is the study of human impacts on biodiversity, with special emphasis on management processes that prevent species extinctions and ameliorate anthropogenic damage to ecosystems. We rely on a healthy biosphere for most of our basic requirements for food, medicines, chemicals, fibers, and building materials. Ecosystem processes are dependent on biodiversity and are critical for nutrient recycling, degradation of human wastes and pollutants, and maintenance of the chemical composition of the atmosphere. Biodiversity also provides important aesthetic benefits, as well as a vast genetic library that provides vital resources for the developing enterprise of biotechnology.

Students earning a bachelor's degree in Biological Sciences under the Conservation Biology track are trained to help society understand the extent and consequences of biodiversity loss, and to provide objective scientific data to resource managers and social planners. Students who are broadly trained in fields relevant to Conservation Biology, such as ecology, population genetics, evolutionary biology, soil science, geography, and other disciplines, will be prepared for careers in conservation science, education, preserve management, policy making, consultancy, science writing, and others. The Conservation Biology track prepares students for not only careers in the public (local, state, and federal governments) and private conservation industry but also graduate studies in conservation science.
1. Additional lower-division requirements
   a) ENSC 006/ECON 006
   b) GEO 002

2. Upper-division requirements
   a) BIOL 102
   b) ENSC 172
   c) Breadth Electives: Courses in the disciplines important in Conservation Biology (one course from each of the following areas)
      (1) Evolution
         BIOL 105, BIOL 108
      (2) Ecology
         BIOL 117, BIOL 127/ENTM 127, ENSC 146
      (3) Systematics:
         ENST 112/BIOL 112/PSCE 112, ENSC 144
      (4) Biodiversity:
         BIOL 151, BIOL 163, PSCE 130/BIOL 130, ENST 100/BIOL 100, ENTM 109, PLPA 134/BIOL 134 and PLPA 134L/BIOL 134L, or other appropriate course that includes a laboratory and is approved by a faculty advisor
      (5) Abiotic and Landscape Studies:
         ENST 100, GEO 160, GEO 162, GEO 168A
      (6) Applications:
         PSCE 122/BIOL 142, ENTM 124, ENTM 129, GEO 167
      (7) Human Issues:
         ANTH 110, ANTH 129, ANTH 132, ANTH 134, ECON 143A/ENST 143A, ECON 143B/ENST 143B, PHIL 117, SOC 184
   d) Specialization: 12 units of upper-division and/or substantive courses in an area of specialization chosen by the student in consultation with a faculty advisor. Only the following 190 series can be included in the specialization: No more than 4 units of BLRN 197/199 may be included, and BLRN 190 may be applied when used to study graduate level material.
   e) Conservation Internship Program (minimum of 2 units): BLRN 198-I
   f) Conservation Biology Seminar: BLRN 193 must be taken once.

Entomology Track
Entomology is an independent scientific discipline strongly rooted in the biological sciences. It is the study of insects, involving their ecology, physiology, behavior, and often their control in relation to their environment and to man. Since insects are man’s greatest competitors for natural resources, applied scientists with an entomology background are involved in reducing harmful species of insects that destroy food, housing, plants, clothing, or cause disease to humans and livestock. Others may develop methods to increase the number and spread of insects that provide food, pollinate crops, or control harmful insects. Entomologists also are able to use insects to answer basic research questions in the fields of behavior, ecology, toxicology, genetics, evolution, physiology, and molecular biology just to name a few. Students earning a Bachelor’s degree in Biological Sciences under the Entomology track will be trained and prepared for several technical career options including pest control advisors and consultants, survey entomologists, laboratory and field biological technicians and consultants, and agricultural inspectors within both the public (local, state, and federal governments) and private sectors. Additionally, students specializing in the Entomology track will be prepared to continue their studies at the graduate level, teach (for secondary level see Biology track), or continue their studies in a professional school (medicine, veterinary medicine, optometry).

1. Upper-division required courses
   a) BCH 100
   b) BIOL 102, BIOL 151
   c) BIOL 130/PSCE 130
   d) ENTM 100/BIOL 100, ENTM 112/BIOL 112/PSCE 112, ENTM 127/BIOL 127, ENTM 173/BIOL 173

2. Additional upper-division requirements (at least 6 units from the following)
   ENTM 109, ENTM 114, ENTM 124, ENTM 126, ENTM 126L, ENTM 128, ENTM 129, ENTM 129L, ENTM 132, ENTM 133, ENTM 162/BIOL 162, ENTM 190, ENTM 197 (no more than three units of ENTM 190 and ENTM 197 in combination may be taken toward fulfilling this requirement)

3. Related areas (at least 7 units from the following)
   a) Agriculture
      BPSC 102, BPSC 103, BPSC 143/BIOLE 143, BPSC 150, ENST 100, ENST 131, NEM 120, NEM 159/BIOLE 159, PLPA 120/BIOL 120/MCBE 120, PLPA 134/BIOLE 134, PLPA 134L/BIOL 134L
   b) Evolution, Ecology, Behavior, Genetics
      BIOL 105, BIOL 108, BIOL 118, BIOL 157, BIOL 160, BPSC 144, BPSC 146, BPSC 148, GEO 167, GEO 168A, GEO 168B
   c) Cell, Molecular, and Organismal Biology
      BIOL 107A, BIOL 107B, BIOL 109, BIOL 111, BIOL 113, BIOL 114, BIOL 121A/MCBE 121A, BIOL 121B/MCBE 121B, BIOL 121I/MCBE 121I, BIOL 175, BIOL 175L, BIOL 176, BIOL 176L

4. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52.

Environmental Toxicology Track
The effect of environmental pollutants on human health and other biological systems, and the impact of human activity on the environment, is a growing source of public concern. These concerns have led to a greater appreciation of the scientific approaches used to understand and address these problems. Consequently, there is an increasing demand on government, industry and academia for scientists trained in a variety of environmental disciplines.

The Environmental Toxicology curriculum fills this need and provides students with a strong foundation in biology and biochemistry, as well as training in environmental toxicology. All Environmental Toxicology track students are required to complete a series of courses designed to provide a broad, fundamental understanding of environmental toxicology. This curriculum design reflects the academic needs of the field, as well as a commitment to broad-based undergraduate training so that students will retain a number of academic and career options. Graduates will be positioned to pursue careers in environmental toxicology and other environmental life sciences, and have the required background for entry into graduate, medical, dental, or veterinary programs.

1. Upper-division required courses
   a) BCH 100 or BCH 110A-BCH 110B
   b) BIOL 102, BIOL 107A or BIOL 110C, BIOL 111 or BIOL 113 or BIOL 114, BIOL 117
   c) ENST 101 or ENST 136/ENST 136/CMSC 136, ENST 102
   d) ENTM 101, ENTM 150/BIOL 150, ENTM 154

2. Additional upper-division requirements (four courses from the following, with at least one from Chemical Fate and one from Health/Ecology)
a) Chemical Fate
CHEM 005, CHEM 109, CHEM 125, CHEM 150A, CHEM 150B, ENSC 100, ENSC 100L, ENSC 127, ENSC 131, ENSC 135/CHM 135/ENTX 135, ENSC 140/SWCS 140, ENSC 141, ENSC 142, ENSC 142L, ENSC 144/ ENE 144, ENSC 155, ENSC 163, ENSC 172, ENSC 174, ENSC 176/ SWSC 176, SWSC 104/ENSC 104, SWSC 107/ENSC 107, SWSC 111

b) Health/Ecology

3. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52.

Evolution and Ecology Track
Evolution is perhaps the most important central unifying concept linking all areas of the Biological Sciences. Ecology is the study of the inter-relationships and interactions between organisms and their environment.

An area of specialization in Evolution and Ecology primarily serves students who are interested in entering graduate school in one of these fields or in directly entering a career in a related area, such as in an environmental consulting firm or local, state, or federal agency that deals with ecological issues.

Besides a solid background in Evolution and Ecology, due to the flexible nature of the Biological Sciences degree, students can focus their training within the track such that they may prepare themselves for 1) further graduate study in numerous areas of the Biological Sciences, 2) further study in a number of health-related professions (medicine, dentistry, veterinary medicine, optometry), and 3) biological sciences career within private industry, local, state, or federal government.

1. Upper-division requirements (at least 36 units from the following, including one course with laboratory or field component (indicated by *))
a) Required courses
   (1) BCH 100
   (2) BIOL 102
   (3) At least three courses from BIOL 105, BIOL 108, BIOL 117, BIOL 160, ENTM 112/BPSC 112/ BIOL 112. Courses not used to meet this requirement can be applied to additional requirements.
b) Additional requirements (at least one course from each of the following areas)
   (1) Biological Diversity
      BIOL 151*, BIOL 157*, ENTM 100/BIOL 100*, ENTM 114*, PLPA 134/Biol 134.
      PLPA 134L/BIOL 134L*
   (2) Functional Biology and Behavior
   (3) Ecology and Evolution
   2. Statistics requirement (minimum of one course):
      STAT 100A, STAT 100B, STAT 120A
   3. Additional courses in biological sciences (upper division) and related areas from the approved list to bring total units to 52.

Microbiology Track
Microorganisms are ubiquitous from the stratosphere to the depths of the ocean. They encompass the greatest metabolic diversity of all life forms. Many are important in conversion of food products, and more yet, in their spoilage. Some produce important medicinal products, while others, the most potent toxins known. Many are beneficial as symbionts to animals and plants, yet others effect their demise. The importance of microorganisms in public health and in their application to beneficial uses has been recognized since the establishment of the discipline by its two cofounders Robert Koch and Louis Pasteur. Students earning a B.S. degree in Biological Sciences under the Microbiology track will be trained for technical careers in a broad spectrum of the medicinal, agricultural, and environmental fields as consultants and technicians. The newly established industries in the fields of agronomy, biochemistry, biotechnology, botany, cell biology, conservation biology, developmental biology, ecology, ethnobotany, evolution, dentistry, genetics, horticulture, medicine, molecular biology, plant breeding, plant pathology, plant physiology, systematics, and veterinary medicine.

While plant biology is not considered a traditional track for students who plan careers in medicine, veterinary medicine, or dentistry, professional schools may view the individuality and diverse niches in academia, industry, medicine, business, law, biotechnology, government, and agriculture. The track is a flexible one that can be tailored to an individual's interests and career goals. Students should consult with a faculty advisor to clarify educational goals and to plan an appropriate program of study.

Notes: (1) BCH 110A is strongly recommended. (2) STAT 120A is strongly recommended.

1. Upper-division core requirements
   a) BIOL 102
   b) BPSC 130/Biol 130, BPSC 132/Biol. 132, BPSC 138/Biol. 138, BPSC 143/Biol. 143

2. Additional upper-division requirements (at least three courses from the following)
   BIOL 107B, BIOL 109, BIOL 111, BIOL 113, BIOL 114, BIOL 121B/ MCB 121B, BIOL 128/NSC 128, ENSC 141, ENSC 155, MCB 122/ BIOL 122, NEM 159/Biol 159, PLPA 120/Biol 120/MCB 120, SWSC 111

3. Additional courses in biological sciences (upper-division) and related areas from the approved list to bring total units to 52.

Plant Biology Track
The track in Plant Biology is designed to provide students with a basic knowledge in the natural sciences with an emphasis in plant biology and is built on the premise that students with training in plant biology fill unique and diverse niches in academia, industry, medicine, business, law, biotechnology, government, and agriculture. The track is flexible one that can be tailored to an individual's interests and career goals. Students should consult with a faculty advisor to clarify educational goals and to plan an appropriate program of study.

With guidance from faculty, students choose a selection of classes within the track to prepare themselves for careers in teaching, research and other employment opportunities where training in basic sciences and/or plant biology is an asset. The Plant Biology track can prepare students for a wide array of graduate or professional training programs or employment positions in the fields of agronomy, biochemistry, biotechnology, botany, cell biology, conservation biology, developmental biology, ecology, ethnobotany, evolution, dentistry, genetics, horticulture, medicine, molecular biology, plant breeding, plant pathology, plant physiology, systematics, and veterinary medicine.

While plant biology is not considered a traditional track for students who plan careers in medicine, veterinary medicine, or dentistry, professional schools may view the individuality and diverse niches in academia, industry, medicine, business, law, biotechnology, government, and agriculture. The track is a flexible one that can be tailored to an individual's interests and career goals. Students should consult with a faculty advisor to clarify educational goals and to plan an appropriate program of study.

Notes: (1) BCH 110A is strongly recommended. (2) STAT 120A is strongly recommended.

1. Upper-division core requirements
   a) BIOL 102
   b) BPSC 130/Biol 130, BPSC 132/Biol. 132, BPSC 138/Biol. 138, BPSC 143/Biol. 143
MAJOR

The Department of Biology offers Bachelor of Arts and Bachelor of Science degrees in Biology. Both programs are based on the conviction that broad undergraduate training in biology and the physical sciences, together with study in the humanities and social sciences are fundamental to the education of a biologist. In addition to English composition, humanities, social sciences, mathematics, chemistry and physics, both degrees require three introductory biology courses (BIOL 005A, BIOL 005B, and BIOL 005C) and 36 units of upper-division (numbered 100-199) biology courses. The degrees differ only in that 16 units of a foreign language are required for the B.A., whereas the B.S. requires 16 additional units in substantive courses in biology or in related fields.

The research and teaching of the Department includes the different levels of biological organization: cellular, developmental, physiological, organismal, ecological, and populational. An overview of processes at all these levels is presented in the introductory courses (BIOL 005A, BIOL 005B, and BIOL 005C), and emphasis is placed on the unifying principles of the discipline.

Because of the diversity within biology and the wide range of career options, considerable latitude is allowed in selecting upper-division biology courses for the 36 units required for the major. Each student meets regularly with a faculty advisor (see Student Academic Advising below) to plan an academic program and study or specific career objectives. Recommended programs of specialization are provided below as a guide in course selection.

Ordinarily most of the 36 upper-division units required for the Biology major are selected from courses offered by the Department of Biology. With advisor's approval, one or two courses in other departments (e.g., Biochemistry, Cell Biology and Neuroscience) may be

**Associate Professors**
- Richard A. Cardullo, Ph.D.
- Roger D. Farley, Ph.D.
- Walter H. Metzner, Ph.D.
- Mark S. Springer, Ph.D.

**Assistant Professors**
- Alan D. Angulick, Ph.D.
- Kimberly A. Hammond, Ph.D.
- Dmitri Maslov, Ph.D.

**Adjunct Assistant Professors**
- William J. Boarman, Ph.D.
- Michael P. Hamilton, Ph.D.
- Jeffrey E. Lovich, Ph.D.
- Francis A. Muth, Ph.D.

**Lecturer**
- Tracy L. Kahn, Ph.D.

### BIOLOGY

**Subject abbreviation:** BIOL

Mark A. C. Chappell, Ph.D., Chair
Department Office, 1208 Spieth Hall
(909) 787-3579


**Professors**
- Michael P. Allen, Ph.D. (Biology/Plant Pathology)
- Mark A. Chappell, Ph.D.
- Leah T. Haimo, Ph.D.
- Bradley C. Hynan, Ph.D.
- Leonard P. Nunnly, Ph.D.
- Edward G. Platzer, Ph.D. (Biology/Nematology)
- Mary V. Price, Ph.D.
- David N. Reznick, Ph.D.
- John T. Rotenberry, Ph.D.
- Clay A. Sussman, Ph.D.
- Daniel S. Straus, Ph.D.
- (Biological/Biomedical Sciences)
- Nickolas M. Wasier, Ph.D.
- Marlene Zuck, Ph.D.

**Professors Emeriti**
- William L. Beiser, Ph.D.
- Carlton R. Bovell, Ph.D.
- Kenneth W. Cooper, Ph.D.
- Wilbur W. Mayhew, Ph.D.
- John A. Moore, Ph.D.
- Eric T. Pengelley, Ph.D.
- Rodolfo Ruibal, Ph.D.
- Irwin W. Sherman, Ph.D.
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counted as biology courses in meeting upperdivision unit requirements. Qualified undergraduates (GPA 3.0 or above) may participate in graduate-level biology seminar courses by enrolling in BIOL 191. Consent of the instructor is required, and up to four units of BIOL 191 (with letter grade) may be included in the major.

Those who choose to obtain a B.S. degree have as a College breadth requirement an additional 16 units in upper-division biology courses and/or substantive courses in a field or fields related to the major. The purpose of this related area is to add strength and breadth to the major and to meet specific requirements for postgraduate study or a chosen career. These courses are selected with the assistance and approval of a faculty advisor. The substantive courses in fields related to the major may be lower- or upper-division, but they usually have science or mathematics prerequisites (e.g., CHEM 005, BCH 100, STAT 100A-STAT 100B, NNSC 120/PSYC 120, MATH 009C).

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Natural and Agricultural Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

Some of the following requirements for the major in Biology may also fulfill the College’s breadth requirements. Consult with a department advisor for course planning.

1. Life sciences core curriculum (65-69 units)
   a) BIOL 005A, BIOL 005B, BIOL 005C
   b) CHEM 001A-CHEM 001B-CHEM 001C
   c) CHEM 112A-CHEM 112B-CHEM 112C
   d) MATH 009A-MATH 009B
   e) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 021A-PHYS 021B-PHYS 021C
   f) One course from STAT 020, STAT 100A, STAT 105, or STAT 120A
   g) One course from BCH 100 or BCH 110A

   The core curriculum must be completed with a grade point average of 2.0 or better and no grade lower than “C-. “ If a grade of D or F is received in two core curriculum courses, either in separate courses or repetitions of the same course, the student will not be permitted to continue in the major.

2. Upper-division requirements (36 units)
   a) BIOL 102
   b) Thirty-two (32) additional Biology units to be taken in consultation with a faculty advisor

3. Other requirements

   For the Bachelor of Arts only (0-16 units):
   The foreign language requirement may be fulfilled by completing level four or the demonstration of equivalent proficiency in one foreign language.

   For the Bachelor of Science only (16 units):
   An additional 16 units in upper-division biology courses and/or substantive courses in a field or fields related to the major.

Programs of Specialization

Suggested programs are described below for students preparing for careers in the medical professions (including dentistry and veterinary medicine), laboratory technology, the allied health professions, and teaching. Additional courses of study are provided for those interested in various biological fields (cell and molecular biology, molecular genetics, organismal genetics, zoology and physiology, and ecology and population biology). These programs meet most of the requirements for admission to corresponding professional schools and graduate programs.

In some cases a course of study differing substantially from the examples given below will best meet the needs of the student. In consultation with a faculty advisor, a student may prepare a program in other biological specializations such as microbiology, behavior, anatomy or developmental biology.

Students interested in any health related fields should seek information from the Health Professions Advising Office (1145 Batchelor Hall) and Career Services (Veitch Student Center) before developing a plan of study.

Medical Professions

BIOL 102, BIOL 161A-BIOL 161B, BIOL 167; CHEM 005.

Professional schools for medicine, veterinary medicine, osteopathic medicine, dental medicine, pharmacy, optometry, and podiatry commonly require for admission one or two years of college-level biology/courses; work without specifying the exact courses. Some schools, however, do require certain courses, and often specific courses are highly recommended. Information about these requirements and required admission tests (MCAT, DAT, VAE, OAT, PCAT), can be obtained from the Health Professions Advising Office, 1145 Batchelor Hall (http://www.cnas.ucr.edu/~health) and Career Services (Veitch Student Center).

A national organization for each medical profession publishes admissions requirements for each school in that profession. The Medical School Admissions Requirements publication is usually available in the UCR Bookstore. Publications that outline requirements for other professional schools may be ordered in the bookstore, and are available in Career Services (Veitch Student Center).

The most commonly recommended courses for medical school are developmental biology, genetics, cell biology and vertebrate zoology. Most medical, dental and veterinary medical schools require that physics and other science courses be taken with laboratory. Some dental schools require one or two courses in psychology (e.g., PSYC 001, PSYC 002) and principles of management (e.g., BSAD 010). UC Davis School of Veterinary Medicine requires a course in statistics (e.g., STAT 100A), genetics (e.g., BIOL 102), and embryology (e.g., BIOL 167).

Some medical schools recommend that when science or mathematics courses are offered at two different levels, premedical students should take the more rigorous option. On the other hand, it is better to do well in the less rigorous option than to do poorly in the more difficult one. Some medical schools also recommend physical chemistry (e.g., CHEM 109), one year of college-level mathematics (e.g., MATH 005, MATH 009A-MATH 009B or MATH 009A-MATH 009B-MATH 009C), biochemistry (e.g., BCH 100) and statistics (e.g., STAT 100A-STAT 100B). Medical schools usually do not offer substantive instruction in parasitology, so students are advised to consider including BIOL 157 as part of the undergraduate program.

The Medical College Admissions Test (MCAT), Dental Admissions Test (DAT), and tests for other health professions are commonly taken in the spring of the junior year, so chemistry, physics, mathematics and some upper-division biology courses (genetics, anatomy, embroyology, cell biology) should usually be completed during the first three years.

Laboratory Technology

Students who plan to apply to a laboratory technology school must obtain a Clinical Laboratory Technology Trainee license, which certifies that they have completed the required courses for admission to a training program. In addition to the lower- and upper-division courses required for the Biology major, the following courses are required by the California State Department of Health for a trainee license in Clinical Laboratory Science: BIOL 121A/MBCL 121A, BIOL 121B/
MCBL 121B, BIOL 121L/MCBL 121L, BIOL 128/NRSC 128, BIOL 171, BCH 100 or BCH 110A, CHEM 005, and hematology. Students should inquire at the Biological Sciences Undergraduate Advising Center (1001 Batchelor Hall North) concerning hematology, since a separate course is not available at UCR. For admission to training laboratories approved by the American Medical Association, there is an additional requirement of one year of organic chemistry. Parasitology (BIOL 157) and statistics are strongly recommended (e.g., STAT 100A-STAT 100B).

The Department of Biology recommends the following courses to strengthen preparation for a medical technology career: BIOL 107A and BIOL 111.

Career Services staff (Veitch Student Center) can provide information about laboratory technology schools. For current information regarding requirements for clinical training and applications for the Clinical Laboratory Scientist Trainee license (required for admission to any laboratory technology program), the student should call (510) 873-6327, or write: State of California Department of Health, Laboratory Field Services, 2151 Berkeley Way, Annex 12, Berkeley, California 94704.

Allied Health Professions

BIOL 102, BIOL 121A/MCBL 121A, BIOL 121L/MCBL 121L, BIOL 161A-BIOL 161B, BIOL 171, BCH 100.

Students at UCR can take some of the course work preparatory for careers in nursing, physical therapy, dental hygiene, and physician’s assistant programs. Some students may complete their studies here and then transfer to a professional school offering more specialized training and course work for the baccalaureate degree. In dental hygiene, the student may wish to obtain a bachelor’s degree here in Biology and then continue at a professional school for specialized training. For information about these alternatives and the specific requirements of various schools, students should seek information from the Health Professions Advising Office, 1145 Batchelor Hall

Physical Therapy programs are currently in transition toward becoming graduate programs only. Practical work experience is required for admission to physical therapy and physician’s assistant programs (see Internships below). Most professional schools require that science courses be taken with lab where possible. The lower-division requirements for the specific upper-division courses required for admission to the professional schools in the allied health area. Not all the courses listed above are required by each type of professional school. A course in nutrition is usually required by nursing schools. This can probably be met by BCH 010 (Introduction to Nutrition). Students wishing to obtain their degree in biology at UCR before transferring should select additional upper-division course work in biology and related fields appropriate for the career objective.

Teaching Credential

Teachers in the public schools of California must be certified by the State Commission on Teacher Credentialing. The credential requires an undergraduate major, baccalaureate degree, and completion of a graduate credential program such as that offered by the Graduate School of Education at UCR. The latter usually requires three quarters and includes education courses and supervised teaching.

Before admission and student teaching in a graduate credential program, the candidate must pass the California Basic Education Skills Test (CBEST) and demonstrate subject-matter proficiency in the fields in which the candidate will teach. The candidate can demonstrate proficiency either by passing the Commission’s subject-matter assessment examination, or, preferably, by completion of an undergraduate program that is state-approved for teacher preparation.

UCR has an approved undergraduate program for Biology majors who plan to get a Multiple Subjects Credential and teach in the elementary (K-6) grades. A breadth of course work is necessary in addition to the specified requirements for the major. Students are urged to start early, preferably as freshmen, selecting courses most helpful for this career.

UCR does not yet have a state-approved undergraduate program for Biology majors who wish to teach at the secondary level. The Teaching Credential in Science, biology emphasis, is required for biology teachers, grades 7-12. Students who plan to get this credential must take the Commission’s subject-matter assessment examination and should make certain their academic program includes preparatory course work. The examination includes biology in depth and general science with introductory, college-level biology chemistry physics, and geoscience (geology, meteorology, oceanography, astronomy). The intent is that candidates for the Teaching Credential in Science are prepared to teach unifying themes and principles in general and specialized science courses.

There are other credential options (CLAD, BCLAD) and requirements that may be completed during the undergraduate years. Requirements include knowledge of the U.S. Constitution and courses in health (PED 044), cardiopulmonary resuscitation (e.g., PED 021), and mainstreaming (EDUC 116/HMDV 116). Further information is provided in orientation meetings, at the Biological Sciences Undergraduate Advising Center (1001 Batchelor Hall North) and at the Graduate School of Education (1215 Sproul Hall).

Cell and Molecular Biology

BIOL 102, BIOL 107A, BIOL 107B, BIOL 109, BIOL 111 or BIOL 113 and BIOL 114, BIOL 121A/MCBL 121A, BIOL 121B/MCBL 121B, BIOL 121L/MCBL 121L, BIOL 128/NRSC 128, BIOL 150/ENTX 150, BIOL 155/BPSC 155, BCH 100 or BCH 110A-BCH 110B-BCH 110C, BCH 102, CHEM 005, CHEM 109, STAT 100A-STAT 100B or STAT 120A-STAT 120B.

Molecular Genetics


Organismal Genetics

BIOL 102, BIOL 107A, BIOL 107B, BIOL 109, BIOL 115, BIOL 150/ENTX 150, BIOL 155/BPSC 155, BCH 185/BPSC 185, NRSC 169

Zoology and Physiology

BIOL 102, BIOL 105, BIOL 111 or BIOL 113 and BIOL 114, BIOL 151, BIOL 160, BIOL 160L, BIOL 161A-BIOL 161B, BIOL 167, BIOL 175, BIOL 176, BCH 100. Students are also encouraged to take laboratory courses (e.g., BCH 102, BIOL 175L, BIOL 176L). Also recommended: BIOL 157, a course in ecology (e.g., BIOL 117 or BIOL 127/ENTM 127). BIOL 100/ENTM 100, BIOL 173/ENTM 173, STAT 100A-STAT 100B.

Ecology and Population Biology

BIOL 102, BIOL 105, BIOL 108, BIOL 117, BIOL 118, BIOL 130/BPSC 130, BIOL 160, BIOL 160L, either BIOL 175 and BIOL 175L or BIOL 143/BPSC 143, MATH 009A-MATH 009B-MATH 009C, either STAT 120A-STAT 120B or STAT 100A-STAT 100B.

Also recommended: BIOL 151, BIOL 161A, BIOL 163, BPSC 146, MATH 046.

Preparation for Graduate School

The specializations presented above are appropriate as preparation for those planning to attend graduate school for advanced degrees. The faculty advisor will assist in selecting combinations of courses appropriate for advanced study in the fields listed above and others. Students considering graduate study are encouraged to gain competence in at least one foreign language. Undergraduate
research and courses in computer science and statistics should also be considered.

The various campuses and departments of the University of California set their own requirements for admission to graduate school, but students should expect that at least a “B” average is required to be eligible for consideration. Higher levels are usually necessary for applicants to be competitive for most programs. Letters of recommendation, undergraduate research and results on the Graduate Record Examination are also considered. A minimum GPA of 2.50 in the last 60 units of undergraduate course work is necessary to be eligible for admission to master’s degree programs in the California State University system, but campuses and departments usually have additional or higher requirements.

Transfer Students
Transfer students majoring in Biology need to complete at least three of the following full-year sequences, which must include general chemistry:

1. General chemistry, equivalent to CHEM 001A-CHEM 001B-CHEM 001C
2. First-year calculus, equivalent to MATH 009A-MATH 009B
3. General biology, equivalent to BIOL 005A and BIOL 005B (and BIOL 005C, if available)
4. General physics with laboratory equivalent to PHYS 002A, PHYS 002B, PHYS 002C or PHYS 040A, PHYS 040B, PHYS 040C

Students must have a minimum grade point average of 2.70 in transferable college courses.

If time permits, students are strongly encouraged to complete one year of organic chemistry with a laboratory (for which a one-year chemistry series is a prerequisite). Partial satisfaction of the breadth requirements (e.g., humanities and social sciences) will also accelerate the student’s progress.

In order to integrate transfer credits with a program of study at UCR, it is important that all new transfer students consult with a faculty advisor before or early in their first quarter on campus (see Student Counseling below).

Prospective UCR students are welcome to discuss their past and future academic program with a faculty advisor. Call the Biological Sciences Undergraduate Advising Center (909) 787-3579 to arrange an appointment.

**Full or Part-time Study**
Students majoring in Biology ordinarily enroll full time in 12 to 18 units of course work each quarter. Advisor’s approval is required for exceptions. Students who are unable to enroll full time because of health, family responsibilities or outside employment may apply to the College Office (1140 Batchelor Hall) for permission to enroll part-time. Documentation of hours of employment is required. Part-time students may take no more than 10 units in one quarter, and they receive a 50 percent reduction in the Educational Fee for that quarter.

**Grading Basis**
Students are required to enroll for letter grade credit in science and mathematics courses used to satisfy major requirements. Science and mathematics courses counted as electives may be taken on a Satisfactory/No Credit basis. Non-science courses such as those in humanities and social sciences may also be taken S/NC.

English and foreign language courses may be taken S/NC, but this is not recommended. English composition is so basic and important that students should aim for excellence rather than a satisfactory level of achievement. Since language courses are often taken in series, progress is cumulative, and students may fall behind if only a satisfactory level is attempted in early courses in the sequence.

For policies on S/NC grading, see the Academic Regulations section of this Catalog.

**Student Academic Advising**
Academic advising is available through the Biological Sciences Undergraduate Advising Center. Petitions and other related business requiring an advisor’s signature or approval should be routed through the Biological Sciences Undergraduate Advising Center. The Center is open from 9:00 a.m. to noon and 1:00 p.m. to 4:00 p.m. Monday through Friday and is located in 1001 Batchelor Hall North, (909) 787-3579.

The Department of Biology requires that each new freshman and transfer student consult with a faculty advisor before or during the first quarter at UCR. After that initial conference to review transfer credits and plan a program of study, the student may visit the Biological Sciences Undergraduate Advising Center to speak with an advisor as needed.

The Department recommends that each student meet with a faculty advisor at least once each year to review progress, clarify career objectives and revise the program of study so it is commensurate with the developing interests and objectives of the student.

**Independent Study and Research**
The Department of Biology offers courses in which students can enroll to do independent laboratory research or an in-depth library study of a topic of special interest.

Students desiring to do Independent Reading (BIOL 194), Introduction to Research (BIOL 197) or Junior/Senior Research (BIOL 199) should consult with a professor who is willing to supervise the project. The student may suggest a specific question or formulate a project after consultation with the instructor. The Biological Sciences Undergraduate Advising Center staff (1001 Batchelor Hall North) can provide information about the research fields of the professors.

To enroll in these courses, the student must obtain an application form from the Biological Sciences Undergraduate Advising Center. Instructions for writing a brief description of the proposed project are provided with the form. The completed application, signed by the professor in charge of the project, is submitted to the Biological Sciences Undergraduate Advising Center preferably before the first day of the quarter, but no later than the end of the second week of the quarter.

Applicants for BIOL 194 and BIOL 199 should ordinarily be juniors or seniors with a GPA of 3.00 or higher. Sophomore students with a GPA of 3.00 or higher may apply to enroll in BIOL 197 (Introduction to Research), since the purpose of this course is to enable the student to do preliminary reading and laboratory research to explore with the professor the feasibility of undertaking a project for later enrollment in BIOL 199. Enrollment in BIOL 197 is not required before enrollment in BIOL 199, but the former course is available for those situations where preliminary work will be helpful.

For BIOL 194 and BIOL 199, a report of the library study or laboratory results for the quarter is written by the student, reviewed by the sponsoring professor, and submitted to the Biological Sciences Undergraduate Advising Center by the last day of instruction of the quarter.

BIOL 194, BIOL 197 and BIOL 199 are graded S/NC, and up to 9 units of credit may be counted as part of the 16 substantive units related to the major for the B.S. degree.

**Internships**
Internships provide students with practical, part-time work experiences in conjunction with their academic studies. The internships are designed to relate a student’s academic preparation in the major with professional work at the entry level in community businesses and organizations. They can be one or more quarters in duration. For more information or to arrange an internship, see the Internship Coordinator in Career Services (Veitch Student Center).

As much as possible, the internships are arranged to accommodate the student’s specific
interests. Those majoring in Biology commonly work in local hospitals, clinics, museums and medical research laboratories. Some students do internships in health administration, environmental planning and natural resource management. Those considering high school teaching as a possible career can work as a tutor or teacher's assistant in local high schools.

Students majoring in Biology are welcome to participate in the internship program, but they are not paid for this work, and the Department of Biology does not give academic credit for internships. Students frequently find internships helpful in investigating a possible career, and some experience in the work environment is helpful or required for admission to professional and technical training schools.

Natural Reserve System
This system was formed by the University of California in 1965 to preserve for study a series of undisturbed natural areas representing the state's vast ecological diversity. Since then the system has grown to include twenty-seven reserves, eight of them administered by the UCR Committee of the Natural Reserve System. The reserves administered by the Riverside campus are described in the Special Study Resources and Facilities section of this catalog.

Most of the reserves are undeveloped except for fencing, roads and trails, but laboratory facilities, housing and campgrounds for class use are available at some sites. The reserves are used as outdoor classrooms and laboratories by students, teachers and researchers from educational institutions, public and private, throughout the state, across the nation and around the world. Some of the courses offered by the UCR Department of Biology include field trips and overnight camping trips to the reserves. In the field, students are introduced to the great diversity of plant and animal organisms in Southern California, and to the effect of environmental factors on this diversity.

Undergraduate and graduate students who wish to use the reserves in their individual research projects should contact Dr. John T. Rotenberry, Department of Biology (3372 Spieih Hall, (909) 787-3953) to obtain an application, map and list of rules and regulations.

White Mountain Research Station (WMRS) Supercourse: Environmental Biology
The White Mountain Research Station (WMRS) Supercourse exposes students to and trains them in diverse approaches to solving problems about plant and animal interactions with each other and with their environments, both pristine and human perturbed. In this course, the Owens Valley of eastern California serves as a microcosm of natural resource exploitation, symbolic of many global systems, where a major resource (water, in this instance) is collected and exported, potentially to the detriment of the source ecosystems. Students are in residence at the WMRS 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. BIOL 164A (Applied Conservation Biology), BIOL 164B (Field Ecology), and BIOL 164C (Physiological Ecology). In addition, students enroll in BIOL 164D (4 units: Independent Research in Environmental Biology) and give a poster presentation at the annual Physiological Ecology meeting held at WMRs. Contact the Biological Sciences Undergraduate Advising Center at (909) 787-3579 for more information.

GRADUATE PROGRAM
The Department of Biology offers programs leading to the degrees of Master of Science and Doctor of Philosophy in Biology with specializations in Cell and Molecular Biology, Evolutionary Biology, and Physiology. The University requires that domestic applicants to graduate status must supply Graduate Record Examination scores for the General Tests (verbal, quantitative and analytical) before they can be admitted. The Department of Biology also requires submission of the Subject Test score.

All graduate students entering the Department of Biology meet with a guidance committee during the first quarter of enrollment so that their educational background can be assessed. Considering the student's specialization, the committee recommends a program of study to be followed in pursuit of graduate work. Because of the diversity among the specializations, course requirements for advanced degrees are specified by the student's guidance committee in accordance with the specific requirements of each specialization.

Master's Degree
To qualify for the master's degree in Biology, candidates must meet the minimal requirements of the Thesis Plan and the requirements of the Department of Biology. These requirements are

Thirty-six (36) quarter units of approved courses in the 100 or 200 series, of which at least 24 units must be in 200 series courses in the biological sciences (students in the Cell and Molecular track must take BIOL 200A-BIOL 200B). Not more than 12 units of BIOL 299 may be applied to the degree. A minimum of 12 units of course work other than courses in the 290 series must be completed in fulfillment of the requirement for 24 units of graduate courses. Preparation and presentation of an acceptable thesis and a final oral examination in defense of the thesis are required of every candidate for the degree.

Doctoral Degree
In addition to the general requirements of the Graduate Division, students intending to become candidates for the Ph.D. degree in Biology must pass a written examination in their special field of interest not later than the end of the second year of residence. Course requirements are determined by the guidance committee in consultation with the student. Candidates for the Ph.D. are required to have at least one year of approved teaching experience. The normative time to the Ph.D. degree is 18 quarters.

Opportunities for Graduate Study in Neuroscience
Faculty from the Department of Biology also participate in the graduate program in Neuroscience which draws on the strengths of distinguished scientists from several units. For further information concerning work in this area, see Neuroscience Graduate Study in the Curricula and Courses section of this catalog.

LOWER-DIVISION COURSES

BIOL 002. Cellular Basis of Life. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): none. An introduction to the fundamentals of life processes at the cellular level. Topics include cell structure, chemical composition, metabolism, reproduction, genetics, and development with emphasis on humans. Not recommended for natural science majors. Credit is not allowed for both BIOL 002 and BIOL 005A. Either BIOL 002 or BIOL 003 may be taken as a breadth requirement in biology; together they provide a general introduction to the field of biology.

BIOL 003. Organisms in Their Environment. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): none. An introduction to the physiology, ecology, and evolution of living organisms with emphasis on humans. Not recommended for natural science majors. Credit is not allowed for both BIOL 003 and BIOL 005B. Either BIOL 002 or BIOL 003 may be taken as a breadth requirement in biology; together they provide a general introduction to the field of biology.

BIOL 005A. Introduction to Cell and Molecular Biology. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CHEM 001A (may be taken concurrently); consent of instructor is required for students repeating the course. An intensive course designed to prepare students for upper-division courses in cell and molecular biology. Covers biochemical, structural, metabolic, and genetic aspects of cells. (Required for Biology majors; recommended for science majors desiring an introduction...
to biology. Credit is not awarded for both BIOL 002 and BIOL 005A.

BIOL 005B. Introduction to Organismic Biology. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005A with a grade of "C-" or better; CHEM 001A-CHEM 001B (CHEM 001B may be taken concurrently); consent of instructor is required for students repeating the course. An intensive course designed to prepare the students for upper-division courses in organismal biology. Covers developmental biology, physiology, and regulation at the level of the organism. (Required for biology majors; recommended for science majors desiring an introduction to biology.) Credit is not awarded for both BIOL 003 and BIOL 005B.

BIOL 005C. Introductory Evolution and Ecology. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005A and BIOL 005B (or BIOL 002 and BIOL 003 for non-Biology majors) with grades of "C-" or better; MATH 009A or equivalent (may be taken concurrently); consent of instructor is required for students repeating the course. An intensive course designed to introduce the student to the subjects of evolution and ecology. Covers population dynamics, community ecology, population genetics, and evolutionary theory. (Required for Biology majors; recommended for science majors desiring an introduction to biology.) Students who take BIOL 002 and BIOL 003 as part of another major, or those who take equivalent first-year biology at another institution, may enter directly into BIOL 005C without critical handicap.

BIOL 010. Headlines in the History of Life. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): none. Evolution of life beginning with procellular life. Topics include the origin of sex, multicellularity, vertebrate classes, morphological specializations, adaptive radiations, extinction dynamics, and the biology of dinosaurs. Cross-listed with GEO 003.

BIOL 030. Human Reproduction and Sexual Behavior. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): none. A consideration of human anatomy and behavior as related to sexual reproduction, including discussion of fertility, pregnancy, childbirth and birth control. Consideration will also be given to homosexuality, venereal diseases, sex education, sexual intercourse and response.

BIOL 034. Human Heredity and Evolution. (4) Lecture, three hours; discussion and problem solving, one hour; audio-visual aids plus discussion, one hour. Basic human genetics and evolution, emphasizing their relationship to physical and emotional health. Political, philosophical and ethical implications of human heredity and evolution.

BIOL 040. Disease and History: From the Bubonic Plague to AIDS. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): none. This lecture course for nonscience majors will deal with the natural history of infectious diseases and how plagues have influenced the course of human history. It will cover the biology, pathogenesis, epidemiology, and immunology of viruses, bacteria, and protozoan parasites causing smallpox, yellow fever, influenza, AIDS, syphilis, bubonic plague, tuberculosis, leprosy, malaria, and African sleeping sickness. The role of scientific inquiry in the conquest of human disease will be emphasized.

UPPER-DIVISION COURSES

BIOL 100. General Entomology. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005B, BIOL 005C, or equivalents; or consent of instructor. Introductory study of insects. Earth's most diverse group of animals (75 percent of animal species are insects). Lecture covers the anatomy, physiology, ecology, behavior, and diversity of insects. Laboratory focuses on insect identification. Cross-listed with ENTM 100.

BIOL 102. Introductory Genetics. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A and BIOL 005B with grades of "C-" or better. An introductory course, including classical Mendelian genetics, linkage and recombination, sex-linked traits, cytogenetics, developmental genetics, and molecular genetics. Also includes some probability theory and statistics.

BIOL 105. Evolution. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 100B, CHEM 101C or CHEM 011C, CHEM 112C, MATH 009B or MATH 099B, PHYS 002C, PHYS 002L, BCH 100 or BCH 110A, one course in statistics; or consent of instructor. Causal interpretation of organic diversity and adaptation. Topics include inference of evolutionary change from the fossil record and from genomic and molecular patterns; microevolution and macroevolution; systematics and the species problem; selection, drift, and other forces of evolution.

BIOL 107A. Molecular Biology. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 011C, CHEM 112C, MATH 009B or MATH 099B, PHYS 002C, PHYS 002L, BCH 100 or BCH 110A. The study of the structure and function of the genetic material, including DNA structure, DNA replication and recombination, regulation of gene expression, and protein synthesis. Both prokaryotic and eukaryotic systems are examined, including contemporary recombinant DNA technology and applications of molecular cloning procedures.

BIOL 107B. Advanced Molecular Biology. (3) Lecture, two hours; discussion, one hour. Prerequisite(s): BIOL 107A or BCH 110C or equivalents. An advanced treatment of the fundamental structure of the genetic material. Topics include genome structure and chromosome organization, DNA replication and gene expression, cloning organisms, molecular medicine, protein engineering, and application of modern molecular biology to agricultural problems. Coverage of each topic includes discussion of the impact of the emerging molecular technology on society.

BIOL 108. Introductory Population Genetics. (4) Lecture, three hours; discussion and demonstration, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 011C, CHEM 112C, MATH 009B or MATH 099B, PHYS 002C, PHYS 002L, BCH 100 or BCH 110A, one course in statistics. A study of the factors influencing the genetic structure of natural populations. Topics discussed include the neutralist versus selectionist debate, molecular evolution, ecological genetics, and quantitative genetics.

BIOL 109. Laboratory in Cell and Molecular Biology. (5) Lecture, one hour; discussion, one hour; laboratory, nine hours. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 111; consent of instructor. An experimental, integrative approach to contemporary cell and molecular biology techniques. Experiments include immunomolecular isolation of cellular proteins and nucleic acids, electrophoretic analysis and immunoblotting, enzymatic manipulation of DNA in vitro, molecular cloning, and gene expression. Credit is awarded for only one of BCH 153/BIOL 153/BFSC 153 or BIOL 110.

BIOL 110. Biology of Human Problems. (4) Seminar, four hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 011C, CHEM 112C, MATH 009B or MATH 099B, PHYS 002C, PHYS 002L, BCH 100 or BCH 110A, one course in statistics; or consent of instructor. Devoted to selected human problems that have a large biological component and that relate to medicine, ethics, and human existence. Topics covered vary from year to year and include issues of major bioethical importance such as euthanasia, national health care, effects of industrial pollution on individuals and communities, population problems, abortion, and genetic engineering. Graded Satisfactory (S) or No Credit (NC).

BIOL 111. Cell Biology. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A or equivalent. Principles and philosophy of classification: phylogenetic and phenetic methods, species concepts, taxonomic characters, evolution, hierarchy of categories, and nomenclature. Cross-listed with BFSC 112 and ENTM 112.

BIOL 113. Advanced Cell Biology: Membranes, Organelles, and the Cytoskeleton. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 011C, CHEM 112C, MATH 009B or MATH 099B, PHYS 002C, PHYS 002L, BCH 100 or BCH 110A, one course in statistics. An examination of the organization, function, and behavior of eukaryotic cells. Emphasis is placed on the experiments that form the basis of the current understanding of the cell. Students read original journal articles, an analysis of which is the focus of the discussion section. Credit is not awarded for BIOL 113 if it has already been awarded for BIOL 111 or BIOL 114.

BIOL 114. Advanced Cell Biology: Cellular Reproduction and Signaling. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 011C, CHEM 112C, MATH 009B or MATH 099B, PHYS 002C, PHYS 002L, BCH 100 or BCH 110A, one course in statistics. An examination of the organization, function, and behavior of eukaryotic cells. Focuses the molecular mechanisms used by cells to control reproduction, growth, and responses to extracellular signals. Emphasis is on experiments that form the basis of the current understanding of the cell. Students read original journal articles, an analysis of which is the focus of the discussion section. Credit is not awarded for BIOL 114 if it has already been awarded for BIOL 111.

BIOL 115. Human Genetics. (3) Lecture, three hours. Prerequisite(s): BCH 110A-BCH 110B, BCH 110C or BIOL 107A (may be taken concur-
BIOL 117. Introductory Population and Community Ecology (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 009B or MATH 009B, PHYS 002C, PHYS 002LC, BCH 100 or BCH 110A, one course in statistics; consent of instructor. Factors governing the distribution and abundance of organisms. Topics include population dynamics, population interactions, the nature and organization of communities, and the role of biotic interactions in evolutionary change. Credit is awarded for only one of BIOL 117 or BIOL 127/ENTM 127.

BIOL 118. Field Course in Evolutionary Ecology (4)
Lecture, one hour; discussion, one hour; field, eight hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, BIOL 117 or equivalent, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 009B or MATH 009B, PHYS 002C, PHYS 002LC, BCH 100 or BCH 110A, one course in statistics; consent of instructor; BIOL 163 recommended. A series of field exercises related to topics of current interest in evolutionary ecology. Topics include the effects of competition, predation, and mutualism on populations and communities; and theories of optimal behavior, morphology and life history. Emphasis placed on the design, execution, and analysis of field experiments. Credit is awarded for only one of BIOL 118 or BIOL 164B.

BIOL 120. Introduction to Plant Pathology (3)
Lecture, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 121A/MCBL 121A and BIOL 121B/MCBL 121B recommended. An introduction to the study of plant diseases. Topics include disease-causing agents, host-pathogen interaction during disease development, and strategies for disease management. An optional, separate laboratory is offered. Cross-listed with MCBL 120 and PLPA 120.

BIOL 120L. Introduction to Plant Pathology Laboratory (1)
Laboratory, four hours. Prerequisite(s): BIOL 005A, BIOL 005B, concurrent enrollment in BIOL 120/MCBL 120/PLPA 120 or consent of instructor; BIOL 121A/MCBL 121A and BIOL 121B/MCBL 121B recommended. Fundamentals in the use of laboratory instruments and techniques for the detection, isolation, and identification of representative infectious agents that cause disease in plants: Cross-listed with MCBL 120L and PLPA 120L.

BIOL 121A. Microbiology (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 009B or MATH 009B; consent of instructor. An intensive introduction to the fundamental physiology and molecular biology of bacteria and viruses. Covers evolutionary origins of metabolic, bacterial, and viral molecular genetics, and an introduction to microbial pathogenesis. Cross-listed with MCBL 121A.

BIOL 121B. Microbiology (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 121A/MCBL 121A with a grade of "C" or better or consent of instructor. An intensive introduction to the fundamental physiology and molecular biology of bacteria and viruses. Covers research strategies for examining microbial pathogenic mechanisms. Cross-listed with MCBL 121B.

BIOL 121L. Microbiology Laboratory (3)
Lecture, one hour; laboratory, six hours. Prerequisite(s): BIOL 121A/MCBL 121A with a grade of "C" or better. Laboratory exercises in diagnostic bacteriology; basic virology and epidemiology; includes fundamental and diagnostic microbiological procedures, basic mechanisms of microbial genetic exchange, and a project examining bacterial epidemiology. Cross-listed with MCBL 121L.

BIOL 122. Food Microbiology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 121A/MCBL 121A with a grade of "C" or better. Covers spoilage and preservation of food; food quality and indicator organisms; the role of microbial pathogens in the production of dairy goods and fermented beverages; food-borne pathogens and microbiological production of toxins; and classical and modern molecular methods for detection of food microorganisms. Cross-listed with MCBL 122.

BIOL 123. Introduction to Comparative Virology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 110A-BCH 110B (BCH 110B may be taken concurrently); BIOL 121A/MCBL 121A (BCH 121A or BIOL 107A or BIOL 121A/MCBL 121A (BCH 121A or BIOL 107A or BIOL 121A/MCBL 121A may be taken concurrently); consent of instructor. Principles of insect ecology. Topics, with examples emphasizing the Arthropoda, include factors governing population growth; ecological and evolutionary interactions with hosts, competitors, and natural enemies; structure of ecological communities; and adaptations to different environments. Cross-listed with MCBL 123 and PLPA 123.

BIOL 127. Insect Ecology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005C or consent of instructor. Principles of insect ecology. Topics, with examples emphasizing the Arthropoda, include factors governing population growth; ecological and evolutionary interactions with hosts, competitors, and natural enemies; structure of ecological communities; and adaptations to different environments. Credit is not allowed for both BIOL 117 and BIOL 127/ENTM 127.

BIOL 128. Immunology. (3)
Lecture, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 105B, BIOL 111 or BIOL 111B, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 009B or MATH 009B, PHYS 002C, PHYS 002LC, BCH 100 or BCH 110A, one course in statistics. A study of humoral and cellular immunology. Topics include lymphoid systems, cells, antigens, antibodies, antibody formation, cellular immunity and tumor and transplantation immunology. Diseases and altered immune states associated with each topic are discussed in detail. Cross-listed with MATH 128.

BIOL 130. General Botany. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, BCH 100 or BCH 110A-BCH 110B-BCH 110C, MATH 009A-MATH 009B, PHYS 002A, PHYS 002B, STAT 020 or STAT 100A (may be taken concurrently); consent of instructor. Plants as a model system in which to define plants, to understand their structure, function, reproduction, and evolution, and to define their role in nature. Cross-listed with BPS 130.

BIOL 132. Plant Anatomy. (5)
Lecture, three hours; laboratory, six hours. Prerequisite(s): BIOL 005A and BIOL 005B, or consent of instructor. Functional and developmental anatomy of plant cells, tissues, and organ structure. All aspects of the flowering plant life cycle are covered from germination to pollination and fruit and seed development. Cross-listed with BPS 132.

BIOL 134. Introduction to Mycology. (3)
Lecture, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, or equivalents. Introduction to the morphology, taxonomy, genetics, physiology, ecology, and economic importance of the major groups of fungi. Cross-listed with PLPA 134.

BIOL 134L. Introduction to Mycology Laboratory (1)
Laboratory, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, or equivalents; concurrent enrollment in BIOL 134/PLPA 134; or consent of instructor. Introduces fundamentals in the use of laboratory instruments and techniques for the isolation, cultivation, and identification of representatives of the major taxa of fungi. Cross-listed with PLPA 134L.

BIOL 138. Morphology of Vascular Plants. (4)
Lecture, two hours; laboratory, six hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, or consent of instructor. Comparative morphology and evolution of vascular plants studied from the viewpoint of both fossil and living representatives and with a focus on the Angiosperms. Cross-listed with BPS 138.

BIOL 142. Restoration Ecology. (4)
Lecture, three hours; two one-day field trips; three half-day field trips. Prerequisite(s): BIOL 005C, BIOL 117, CHEM 112C, STAT 202 or STAT 100A (may be taken concurrently); consent of instructor. BIOL 102 recommended. An examination of the basic ecological principles related to land restoration. Topics include enhanced succession, plant establishment, plant adaptations, ecotypes, weed colonization and competition, nutrient cycling, functions and reintroduction of soil microorganisms, restoration for wildlife, and the determination of successful restoration. Includes field trips to restored sites. Cross-listed with BPS 122.

BIOL 143. Plant Physiology. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 130/BPS 130, CHEM 112A-CHEM 112B-CHEM 112C or equivalents; consent of instructor. A survey of the fundamental principles of plant physiology, including photosynthesis, respiration, water relations, mineral nutrition, growth, morphogenesis, plant hormones, dormancy and senescence. Cross-listed with BPS 143.

BIOL 150. Cancer Biology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 111 is recommended (may be taken concurrently). The origin, development, and treatment of cancer are explored with emphasis on molecular mechanisms. Topics such as oncogenes, tumor suppressors, cell cycle an differentiation, the role of cancer, and principles of cancer prevention are explored. Cross-listed with ENTX 150.

BIOL 151. Invertebrate Zoology. (5)
Lecture, three hours; discussion, one hour; laboratory, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, PHYS 002A with grades of "C" or better. Structure, classification, and biology of the invertebrates.
BIOL 152. Principles of Invertebrate Palaeobiology and Paleocology. (4)
Lecture, two hours; laboratory, three hours; three-one day field trips. Prerequisite(s): BIOL 005C with a grade of "C-" or better or BIOL 010/GEOL 003 with a grade of "C-" or better. Topics include evolution and the fossil record, palaeobiology, classification theory, the nature of adaptive radiations, and extinctions. Cross-listed with GEO 152.

BIOL 153. Plant Biotechnology. (4)
Lecture, one hour; discussion, one hour; laboratory six hours. Prerequisite(s): BCH 110C or BIOL 107A upper-division standing; consent of instructor. A study of modern techniques in plant genome modification. Topics include nucleic acid cloning and sequencing, plant tissue culture and genetic transformation, controlled-environment plant growth, gene mapping, and germplasm collections. Also explores the impact of plant biotechnology on economic, agricultural, nutritional, medical, and societal relevance; and regulatory issues. Cross-listed with BCH 153 and BPS 153. Credit is awarded for only one of BCH 153/BIO153/BPS 153 or BIOL 109.

BIOL 155. Chromosomes (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 102 or consent of instructor. An examination of the structure, function, and behavior of eukaryotic chromosomes. Cross-listed with BPS 155.

BIOL 157. Parasitology. (5)
Lecture, two hours; discussion and demonstration, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 090B or MATH 099B, BCH 100 or BCH 110A, one course in statistics. The nature and principles of parasitism with a survey of various types of animal parasites.

BIOL 159. Biology of Nematodes. (3)
Lecture, two hours; discussion and demonstration, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 090B or MATH 099B, BCH 100 or BCH 110A, one course in statistics. An introduction to the biology of nematodes. Topics include the morphology, physiology development, genetics, behavior, and ecology of nematodes from parasitic and free-living habitats. In the discussion and demonstration section, students observe the comparative morphology and biology of nematodes and give oral presentations on selected nematode life histories. Cross-listed with NEM 159.

BIOL 160. Animal Behavior. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, and BIOL 102 with grades of "C-" or better; CHEM 001C or CHEM 01HC, CHEM 112C, MATH 090B or PHYS 002C; CHEM 112C, MATH 099B or PHYS 090B. Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 099B or PHYS 090B, PHYS 002C, PHYS 090B; one course in statistics; concurrent enrollment in BIOL 164A, BIOL 164B, 164C; consent of instructor. An examination of factors governing the distribution and abundance of organisms. Emphasizes studies of community structures and their relationships to biotic and abiotic components of the environment, using hypothetico-deductive experimental approaches and extensive field work. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of BIOL 164A and BIOL 164B.

BIOL 164A. Applied Conservation Biology. (4)
Lecture and discussion, twenty-five hours per quarter; field and laboratory work, thirty-five hours per quarter. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 090B or PHYS 090B, PHYS 002C, PHYS 002C, PHYS 090B, BCH 100 or BCH 110A, one course in statistics; concurrent enrollment in BIOL 164A, BIOL 164B, 164C; consent of instructor. Special study and research on problems in conservation biology. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of BIOL 164A and BIOL 164B. BIOL 164B and BIOL 171 provide a one-year sequence to meet professional school requirements in human anatomy and physiology.

BIOL 164B. Field Ecology. (4)
Lecture, twenty hours per quarter; discussion, ten hours per quarter; field and laboratory work, thirty hours per quarter. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 090B or PHYS 090B, PHYS 002C, PHYS 090B; one course in statistics; concurrent enrollment in BIOL 164A, BIOL 164B, 164C; consent of instructor. Special study and research on problems inConservation Biology. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of BIOL 164A and BIOL 164B.

BIOL 164C. Physiological Ecology. (4)
Lecture, twenty hours per quarter; discussion, ten hours per quarter; field and laboratory work, thirty hours per quarter. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 090B or PHYS 090B, PHYS 002C, PHYS 090B; one course in statistics; concurrent enrollment in BIOL 164A, BIOL 164B, 164C; consent of instructor. Special study and research on problems in Conservation Biology. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of BIOL 164A and BIOL 164B.

BIOL 165. Comparative Animal Physiology. (3)
Lecture, three hours; discussion, one hour; laboratory, six hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 090B or PHYS 090B, PHYS 002C, PHYS 090B; BCH 100 or BCH 110A, one course in statistics; Concurrent enrollment in BIOL 164A, BIOL 164B, 164C is required. Special study and research on problems in environmental biology, under the supervision of members of the faculty of BIOL 164A, BIOL 164B, and BIOL 164C. Satisfactory (S) or No Credit (NC) grading is not available.

BIOL 167. General Embryology. (4)
Lecture, three hours; laboratory, four hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 090B or PHYS 090B, PHYS 002C, PHYS 090B, BCH 100 or BCH 110A, one course in statistics. A survey of the morphological and physiological events which occur during embryonic development.

BIOL 168. Developmental Biology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 107A; a course in cell biology is recommended. An advanced description of the embryonic development of animals. Covers the basic concepts of fertilization, gastrulation, and neurulation. Emphasizes topics in current developmental research, with an emphasis on the molecular mechanisms of pattern formation and differentiation.

BIOL 171. Human Anatomy and Physiology. (5)
Lecture, three hours; laboratory, two hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 090B or PHYS 090B, BCH 100 or BCH 110A, BIOL 161A-BIOL 161B. An analysis of cell, tissue, and organ structure and function in normal and diseased conditions. The topics studied include the muscular system, glands and hormones, the autonomic nervous system, pharmacology, hematology, digestion and absorption, body fluids and the kidney, the circulatory system, and the histology of major tissues and organs. BIOL 161A-BIOL 161B and BIOL 171 provide a one-year sequence to meet professional school requirements in human anatomy and physiology.

BIOL 173. Insect Physiology. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C or BIOL 005A-BIOL 005B or equivalents, CHEM 112A-CHEM 112B-CHEM 112C or equivalents; consent of instructor. Introduction to principles of insect physiology. Subjects include growth, development and hormones, cuticle, nervous system, circulation, respiration, digestion, nutrition, excretion, reproduction, water balance, and temperature relations. Prior knowledge of insects is not assumed. Cross-listed with ENTM 173.

BIOL 175. Comparative Animal Physiology Laboratory. (2)
Laboratory, six hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 090B or PHYS 090B, PHYS 002C, PHYS 090B, BCH 100 or BCH 110A, one course in statistics. BIOL 175 may be taken concurrently. Laboratory exercises in comparative animal physiology.
BIOL 176. Comparative Neurobiology. (4) Laboratory. Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 055A, BIOL 055B, BIOL 056C, CHEM 001C or CHEM 011HC, CHEM 112C, PHYS 002C, PHYS 02LC. Laboratory experiments and discussion with regard to the structures, function, development, and evolution of vertebrate and invertebrate nervous systems.

BIOL 177. Behavioral Neurobiology. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 055A, BIOL 055B, BIOL 056C, CHEM 001C or CHEM 011HC, CHEM 112C, PHYS 002C, PHYS 02LC. BCH 100 or BCH 110A, one course in statistics. A study of neural mechanisms underlying the natural behavior of animals. Topics include the neural bases of perception, communication, and orientation; neural control of behavioral acts; and the development of neural systems and behavior.

BIOL 185 (E-Z). Advanced Undergraduate Seminar in Biology. (2-4) Seminar, two to four hours. Prerequisite(s): upper-division standing with a major in biology or related field. A seminar course offered to provide biology majors and others who can meet the prerequisites of the course, an opportunity for an in-depth consideration of special topics in biology and related areas. Topics are selected as faculty interest, student interest, and opportunity permit. (Limited enrollment) G. Biology of Development (2); N. Biology of Food (3); E. Psychology (2).

BIOL 190. Special Studies. (1-4) **Individual study, three to twelve hours.** Prerequisite(s): consent of instructor and departmental chairperson. To be taken as a means of meeting special curricular needs. Grading basis to be selected in consultation with the instructor and departmental chairperson. Course is repeatable.

BIOL 191. Seminar in Biology. (2) Seminar, two hours. Prerequisite(s): upper-division standing and consent of instructor. Each quarter will be devoted to a critical study of selected topics in biology. Undergraduates may receive credit for this course for participation in a graduate-level seminar. Course is repeatable.

BIOL 194. Independent Reading. (1-4) Consultation, one to four hours. Prerequisite(s): junior or senior standing and consent of instructor and departmental chairperson. Independent study under faculty supervision. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. For BIOL 200A: maximum of 4 hours.

BIOL 197. Introduction to Research. (1-2) Consultation, one to two hours. Prerequisite(s): sophomore, junior or senior standing and consent of instructor and departmental chairperson. Reading, planning and preliminary laboratory work to develop a research project suitable for BIOL 199, Junior/Senior Research. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIOL 199. Junior/Senior Research. (1-4) Laboratory, one to four hours. Prerequisite(s): junior or senior standing, a minimum GPA of 3.0 and consent of instructor and departmental chairperson. Special problems and research in biology performed under the supervision of members of the faculty of the Department of Biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BIOL 200A-BIOL 200B. Cell, Molecular and Developmental Biology. (4-4) Lecture, three hours; seminar, one hour. Prerequisite(s): BCH 110A-BCH 110B (may be taken concurrently); BIOL 102 or equivalent; for BIOL 200A: BIOL 111 or equivalent; for BIOL 200B: BIOL 107A or equivalent. 200A: A detailed presentation of the interrelationships between structural and functional elements of the living cell; 200B: structure and inheritance of genetic material, gene expression at the cellular and molecular level.

BIOL 203. Cellular Biophysics. (3) Lecture, three hours. Prerequisite(s): CHEM 109 or equivalent, and BIOL 200A-BIOL 200B; or consent of instructor. Biophysical principles that determine cellular structure and function including diffusion, electrochemical gradients, transport, macromolecular interactions, and genetic recombination. Illustrative examples are used to highlight the importance of these principles in modern cell biology and physiology.

BIOL 206. Host-Parasite Relationships. (3) Lecture, three hours. Prerequisite(s): BIOL 100/ENTM 157 or consent of instructor. Examines the fundamental biochemical and developmental requirements for "successful" host-parasite relationships in insects. Emphasizes wap and nematode parasites of insects and vector-parasite interactions involved in transmission of parasites in malaria, trypanosoma, and Lyme disease. Cross-listed with ENT 208.

BIOL 212. Ecological Systems in Space and Time. (4) Lecture, two hours; discussion, one hour; field, thirty hours per quarter. Prerequisite(s): BIOL 117 or BIOL 152/ENTM 152 or equivalent or consent of instructor. Focuses on how ecological systems are interpreted and reconciled at the community, landscape, and palaeontological scales and on the role of extrinsic factors operating at each of these scales. Examines the historical development of our understanding of ecological systems at various scales. Cross-listed with ENT 212 and GEO 212.

BIOL 213. Behavioral Ecology. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 160 or consent of instructor. Examines animal behavior in an evolutionary context. Traces the historical development of the study of behavior, drawing from ethology, comparative psychology, and sociobiology. Topics include evolution of sociality, sexual selection, predator-prey behavior, and parental care.

BIOL 214. Population Genetics. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 108 or consent of instructor. Traces the historical development of modern ideas in Population Genetics. Focuses on the influence of Fisher, Haldane and Wright on current views of genetic variation in natural populations, by examining recent research in the context of their classic works.

BIOL 216. The Theory of Evolution. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 102 or consent of instructor. Traces the historical development of modern ideas in Evolutionary Theory. Focuses on the influence of Darwin and of the various authors of the Modern Synthesis on current views of macroevolution, by examining recent research in the context of their classic works.

BIOL 217. Population and Community Ecology. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 117 or BIOL 127/ENTM 127 or consent of instructor. Traces the development of the major concepts in ecology. Focuses on the influence of pioneers in the field, historical roots of key concepts, and key controversies. Current research is evaluated with reference to these historical origins.

BIOL 218. Field Course in Evolutionary Ecology. (4) Lecture, one hour; discussion, one hour; field, eight hours. Prerequisite(s): graduate standing and consent of instructor. A series of field exercises related to topics of current interest in evolutionary ecology. Topics include the effects of competition, predation, and mutualism on populations and communities; and theories of optimal behavior; morphologies, and life history. Emphasis will be placed on the design, execution, and analysis of field experiments.

BIOL 219. Theory of Systematics. (4) Lecture, two hours; discussion, two hours. Prerequisite(s): BIOL 112/BISC 112/ENTM 112 or equivalent or consent of instructor. Examines topics developed around a series of classical and recent papers on the principles, philosophy, and methodology of modern systematics and phylogenetic methods. Cross-listed with ENT 219 and GEO 219.

BIOL 221. Microbial Genetics. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 110C or BIOL 107A. An in-depth coverage of the genetics of microbes with emphasis on the primary data and the foundation of modern techniques using Escherichia coli and other prokaryotic systems. Topics include genome organization, plasmids, restriction-modification systems, mutation, transposable elements, regulation of gene expression, viruses, recombination, repair, and response to stress. Cross-listed with MCB 221.

BIOL 222. Developmental Genetics. (3) Lecture, two hours; seminar, one hour. Prerequisite(s): BCH 110A-BCH 110B; BIOL 107A or BIOL 200B. Study of molecular genetic strategies and developmental mutations that reveal genetic mechanisms controlling development in higher eukaryotes. Topics include chromosome inactivation and rearrangement, temporal patterns and developmental-mutant models, behavioral genetics, oncogenetics, and immunogenetics.

BIOL 230. Analysis of Ecological Communities. (5) Lecture, three hours; discussion, two hours. Prerequisite(s): PSYC 212 or STAT 108B or equivalent; consent of instructor. Principles of multivariate analysis and its application to the interpretation of ecological community data. Topics include multiple and partial correlation and regression, canonical correlation, detrended and canonical correspondence analysis, multidimensional scaling, similarity indices and cluster analysis, and discriminant analysis.
**BIOL 232. Plant Development. (4)**
Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 102; BIOL 130/BSIC 130; or consent of instructor. An examination of plant development, with emphasis on the genetic mechanisms used in patterning plant form. Topics are taken from current literature and focus on molecular and cellular mechanisms. Cross-listed with BSIC 232.

**BIOL 250. Special Topics in Biology. (1-2)**
Seminar, one to two hours. Prerequisite(s): graduate standing and consent of instructor. Oral presentations and intensive small-group discussion of selected topics in the area of special competence of each staff member. Course content will emphasize recent advances in the special topic area and will vary accordingly. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

**BIOL 252. General Colloquium in Biology. (1)**
Seminar, one hour; discussion, one hour. Prerequisite(s): graduate standing. Oral reports by visiting scholars on current biological research. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

**BIOL 257. Graduate Seminar in Cell, Molecular, and Developmental Biology. (1)**
Seminar, one hour. Prerequisite(s): graduate status or consent of instructor. Oral reports by visiting scholars, faculty and students on current research topics in recombinant DNA. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 257, BSSC 257, ENTM 257, ENTX 257, NEM 257, NRSC 257, and PLPA 257.

**BIOL 261. Colloquium in Recombinant DNA. (1)**
Seminar, one hour. Prerequisite(s): graduate status or consent of instructor. Oral reports by visiting scholars, faculty and students on current research topics in recombinant DNA. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 261, BSSC 261, ENTM 261, and PLPA 261.

**BIOL 262. Advances in Cell, Molecular, and Developmental Biology. (1-2)**
Seminar, one hour; outside research, three hours (for 2-unit enrollees). Prerequisite(s): graduate status or consent of instructor. Oral reports by visiting scholars, faculty and students on current research topics in cellular, molecular and developmental biology. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

**BIOL 265. Advances in Population and Evolutionary Biology. (1-2)**
Seminar, one hour; outside research, three hours (for 2-unit enrollees). Prerequisite(s): graduate status or consent of instructor. Oral reports by visiting scholars, faculty and students on current research topics in population and evolutionary biology. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

Seminar, two hours. Prerequisite(s): graduate standing and consent of instructor. Lectures, discussions, and demonstrations by students, faculty, and invited scholars on selected subjects concerned with the principles of cell development, structure, and function. E. Cell Biology; F. Molecular Biology; G. Developmental Biology. Courses are repeatable.

**BIOL 282. Seminar in Genetics and Evolution. (2)**
Seminar, two hours. Prerequisite(s): graduate standing and consent of instructor. Lectures, discussions and demonstrations by students, faculty and invited scholars on selected subjects concerned with the principles of genetics and evolution. May be repeated for credit.

**BIOL 283. Seminar in Organismal Physiology and Physiological Ecology. (2)**
Seminar, two hours. Prerequisite(s): graduate standing and consent of instructor. Lectures, discussions and demonstrations by students, faculty and invited scholars on selected subjects concerned with the principles of organismal physiology and physiological ecology. May be repeated for credit.

**BIOL 284. Seminar in Biology. (2)**
Seminar, two hours. Prerequisite(s): graduate standing and consent of instructor. Lectures, discussions and demonstrations by students, faculty and invited scholars on selected subjects concerned with the principles of biology. May be repeated for credit.

**BIOL 285. Seminar in Animal Behavior and Neurobiology. (2)**
Seminar, two hours. Prerequisite(s): graduate standing and consent of instructor. Lectures, discussions, and demonstrations by students, faculty and invited scholars on selected topics concerned with animal behavior and its neural and hormonal basis. Course is repeatable.

**BIOL 287. Colloquium in Neuroscience. (1)**
Colloquium, one hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports on current research topics in neuroscience with presentations by visiting scholars, faculty, and students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 287, BSSC 287, CHEM 287, NRSC 287, and PSCC 287.

**BIOL 288. Special Topics in Neuroscience. (2)**
Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) vary each time course is offered. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 289, BSSC 289, CHEM 289, ENTM 289, NRSC 289, and PSCC 289.

**BIOL 290. Directed Studies. (1-6)**
Variable hours. Prerequisite(s): graduate standing. Directed research in biology. Variable hours. Prerequisite(s): graduate standing and consent of instructor. Directed research in biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BIOL 291. Individual Studies in Coordinated Areas. (1-6)**
Variable hours. Prerequisite(s): graduate standing. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BIOL 292. Concurrent Analytical Studies in Biology. (2-4)**
Research, six to twelve hours. Prerequisite(s): consent of instructor. The course will be elected concurrently with an appropriate undergraduate course, but on an individual basis. It will be selected to one or more graduate papers based on research or criticism related to the course. Faculty guidance and evaluation will be provided throughout the quarter. May be repeated for credit.

**BIOL 297. Directed Research. (1-6)**
Variable hours. Prerequisite(s): graduate standing and consent of instructor. Directed research in biology. Experimental studies on specially selected topics in biology under the direction of a staff member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BIOL 299. Research for Thesis or Dissertation. (1-12)**
Variable hours. Prerequisite(s): graduate standing and consent of instructor. Original research in an area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BIOL 301. Teaching of Biology at the College Level. (1)**
Seminar, one hour. Prerequisite(s): graduate standing. A program of weekly meetings and individual formative evaluations required of new Biology Teaching Assistants. Covers instructional methods and classroom/section activities most suitable for teaching biology. Conducted by the TA Development Program. Graded Satisfactory (S) or No Credit (NC).

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**BIOMEDICAL SCIENCES**

**BIOL 303. Teaching of Biology at the College Level. (1)**
Seminar, one hour. Prerequisite(s): graduate standing. A program of weekly meetings and individual formative evaluations required of new Biology Teaching Assistants. Covers instructional methods and classroom/section activities most suitable for teaching biology. Conducted by the TA Development Program. Graded Satisfactory (S) or No Credit (NC).

**BIOL 309. Teaching of Biology at the College Level. (1)**
Seminar, one hour. Prerequisite(s): graduate standing. A program of weekly meetings and individual formative evaluations required of new Biology Teaching Assistants. Covers instructional methods and classroom/section activities most suitable for teaching biology. Conducted by the TA Development Program. Graded Satisfactory (S) or No Credit (NC).

**PROFESSIONAL COURSE**

**BIOL 291. Individual Studies in Coordinated Areas. (1-6)**
Variable hours. Prerequisite(s): graduate standing. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BIOL 292. Concurrent Analytical Studies in Biology. (2-4)**
Research, six to twelve hours. Prerequisite(s): consent of instructor. The course will be elected concurrently with an appropriate undergraduate course, but on an individual basis. It will be selected to one or more graduate papers based on research or criticism related to the course. Faculty guidance and evaluation will be provided throughout the quarter. May be repeated for credit.

**BIOL 297. Directed Research. (1-6)**
Variable hours. Prerequisite(s): graduate standing and consent of instructor. Directed research in biology. Experimental studies on specially selected topics in biology under the direction of a staff member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

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**BIOMEDICAL SCIENCES**

Subject abbreviation: BMSC

Michael B. Stemerman, M.D.,
Dean and Program Director
Stewart W. Shankel, M.D.,
Director of Clinical Instruction
Program Office, B600 Statistics-Computer Bldg.
(909) 787-4333 or 4334

[http://biomed.ucr.edu](http://biomed.ucr.edu)

**Professors**

Craig V. Byus, Ph.D. Pharmacology
(Biomedical Sciences/Biochemistry)
David A. Johnson, Ph.D. Pharmacology
Richard A. Luben, Ph.D. Endocrinology
(Biomedical Sciences/Biochemistry)
Anthony W. Norman, Ph.D. Endocrinology
(Biomedical Sciences/Biochemistry)
Paul M. Quinton, Ph.D. Physiology
Neal L. Schiller, Ph.D.
Microbiology/Immunology
Michael B. Stemerman, M.D.
Biomedical Sciences
Daniel S. Straus, Ph.D. Human Genetics
(Biomedical Sciences/Biology)
Ameae M. Walker, Ph.D. Microanatomy

**Professor Emerita**

Mary Ann Baker, Ph.D. Neurosciences

**Associate Professors**

John Y.-J. Shyy, Ph.D. Pharmacology/Physiology
Christian V. Lytle, Ph.D. Physiology

**Assistant Professor**

Bruce N. Cohen, Ph.D. Neurosciences

**Adjunct Associate Professor**

Robert J. Leonard, Ph.D.

**Clinical Professors**

Neal S. Bricker, M.D.
Lawrence A. Cone, M.D.
Leon H. Ewin, M.D.
The Biomedical Sciences Program is an innovative approach to medical education developed by the University of California, Riverside, the UCLA School of Medicine and the clinically affiliated medical centers in the surrounding communities of Riverside. It offers highly qualified students the opportunity to earn the M.D. degree in seven years instead of eight. It emphasizes the education of physicians who deal with the entire spectrum of disease diagnosis and treatment. Moreover, it provides a social and cultural background for its participants by including electives in the humanities and in the social and behavioral sciences as part of the curriculum.

The Biomedical Sciences Program admits freshmen qualified for entrance into the University of California. Admission is granted to freshmen qualified for entrance into the University of California. Admission is granted to those students who have demonstrated a high level of scholarship in high school so as to provide a strong foundation for undertaking the rigorous, accelerated, first-year curriculum. Admission is also subject to the following criteria:

1. At least three high school laboratory courses (e.g., biology, chemistry, physics)
2. Mathematics competency so as to qualify for college level calculus
3. English composition proficiency so as to qualify for placement either in ENGL 001A or BSWT 001 at the time of enrollment at UCR

Test scores from the Scholastic Assessment Test (SAT) or American College Test (ACT) and three required College Board Achievement Tests are also used to determine eligibility for admission. Continuation in the Program for each succeeding year is decided by a review of academic performance in combination with a personal evaluation of each student based upon extensive faculty-student contact. This allows for evaluating students as individuals with regard to their potential for becoming physicians.

UCR students may also transfer into the Biomedical Sciences Program up until the end of their sophomore year if they have:
1. Taken all the required courses (see Sample Program)
2. Carried an average academic load of approximately 48 quarter units per year
3. Obtained approval from the Premedical Advancement Committee of the Division of Biomedical Sciences.

UCR students interested in transferring into the Biomedical Sciences major are encouraged to contact the Divisional Program Advisor.

During the first three years, students complete a core of premedical courses in the biological and physical sciences and introductory courses in biomedical ethics and medical care, as well as electives in the social sciences and humanities.

At the conclusion of the third undergraduate year, students are selected for continuation in the medical school phase of the Program. The admissions process involves consideration of the student’s record of scholarship, of demonstrated aptitude for a commitment to medicine, of activities outside of the academic setting, of interaction with and compassion for others, of leadership qualifications, and of general personality traits that best characterize the physician. The Admissions Committee evaluates academic transcripts, MCAT scores, letters of recommendation, a statement from the student and reports from special faculty interviewers. The total information is reviewed and advancement to the medical phase for each student is determined by vote of all members of the Admissions Committee.

Beginning with the fourth year those students advanced to the medical school phase of the program are enrolled concurrently at UCR and the UCLA School of Medicine while still in residence at UCR. Students take course work in human anatomy, pathology, physiology, and three years of medical microbiology.

A primary evaluation of each student is made by the UC Divisional Committee. Students will continue their fifth year program of clinical studies, pharmacology, and patient relations at UCR. After their fifth year they transfer to the UCLA School of Medicine and complete the last two years of M.D. requirements. They also receive the...
Bachelor of Science degree from UCR after the fourth year in the program.

Those students who do not continue in the accelerated program have additional opportunities to pursue careers in the health sciences. For example, after earning a B.S. degree they would be well qualified for application for admission to any four-year medical school, including the UCLA School of Medicine. The Biomedical Sciences Program also qualifies students for alternate possibilities such as pursuing graduate study for an M.S. or Ph.D. degree in any of the health-related sciences.

**Degree Requirements**

**University Requirements**

See the Undergraduate Studies section for requirements that all students must satisfy.

**College Requirements**

See Degree Requirements, College of Natural and Agricultural Sciences in the Undergraduate Studies Section, for requirements that students in the B.S. program must satisfy. See the Biomedical Sciences Program office for courses that fulfill the Humanities and Social Sciences breadth requirement.

**Program Requirements**

The sample programs in Biomedical Sciences shown below meet both college breadth and major requirements.

Special requirements of the Program are as follows:

1. The Humanities and Social Sciences portions of the College Breadth requirements must be met within the student’s first three years at UCR.
2. Students must complete two upper-division courses (4 units each) in the Humanities or Social Sciences in addition to those used to satisfy the College requirements. These courses may not be taken S/NC. Courses used to fulfill the Behavioral Sciences requirement (see 3 below) and BMSC 103 may not be used to meet this requirement.
3. Students must complete a one-quarter elective course in Behavioral Sciences dealing with the adjustment of the individual to society and/or relationships of science and medicine to society. This requirement can be met by taking one of the following 4-unit courses: ANTH 106, ANTH 133, ANTH 162, ETST 164/HMDV 164/PYSC 164, ETST 167/PYSC 167, ETST 168/PYSC 168, HMDV 116/EDUC 116, HMDV 117/EDUC 117, HMDV 174/SOC 174, PYSC 140, PYSC 150, PSYC 151, PSYC 152, PSYC 153, PSYC 155, PSYC 160, PSYC 178, SOC 173. This course may not be taken S/NC, but may satisfy a portion of the College breadth requirements in Humanities and Social Sciences.
4. With respect to elective courses, Biomedical Sciences majors should not duplicate any subject material which is covered in the medical phase (years 4-7) of the Program (e.g., human physiology, immunology, genetics, physiological psychology).
5. Students must maintain at least a 3.00 cumulative grade point average for their freshman year to qualify for advancement into the second year of the program. A minimum grade point average of 3.3 is required to advance into the third year of the program.
6. By the end of year 3 of the program, Biomedical Sciences majors should have accumulated a minimum total of 143 academic units. Students must maintain an average of 16 units per quarter; units taken prior to enrolling at UCR or during summer sessions cannot be included.
7. No more than 6 units of undergraduate research (BMSC 097 or BMSC 197L) may be counted towards the major.
8. Courses listed in the sample program below are to be taken according to the indicated schedule.

Students not selected for continuation in the medical school phase of the accelerated program may change to another major in the College of Natural and Agricultural Sciences and complete the course requirements for that major in the fourth year. Students are required to consult regularly with the faculty advisor with whom they design their individualized course programs according to the outline given in the sample program.

**Sample Program**

**Freshman**

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<th>Winter</th>
<th>Spring</th>
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<tbody>
<tr>
<td>CHEM 001A-CHEM 001B-CHEM 001C</td>
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<tr>
<td>MATH 099A-MATH 099B</td>
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<tr>
<td>BIOL 005A, BIOL 005B, BIOL 005C</td>
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Total Units: 16 16 16

**Sophomore**

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<td>CHEM 112A-CHEM 112B-CHEM 112C</td>
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<tr>
<td>PHYS 012A-PHYS 012B-PHYS 012C</td>
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<tr>
<td>STAT 105</td>
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<tr>
<td>Humanities/Social Sciences</td>
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Total Units: 15 17 17

**Junior**

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<td>BMSC 120A-BMSC 120B</td>
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<td>PHIL 188</td>
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<td>Behavioral Sciences</td>
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<tr>
<td>Elective or Humanities/Social Sciences</td>
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Total Units: 15 15 15

**Senior/First Medical Year**

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Total Units: 17.5 19.5 14.5

**Second Medical Year**

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Total Units: 24 21.5 11.5

Additional information may be requested by writing to the Program Counselor or by calling (909) 787-4333.

**LOWER-DIVISION COURSES**

**BMSC 097. Research Tutorial in Biomedical Sciences. (1-2)**

Laboratory, three to six hours. Prerequisite(s): grade point of 3.0 and consent of instructor. Laboratory tutorial in research related to biomedical sciences. To provide laboratory experience in the areas of physiology, microbiology, molecular biology, pharmacology, cell biology, immunology, biochemistry for exceptional lower-division students. A written report is required at the end of each quarter. Graded Satisfactory (S) or No Credit (NC). May be repeated for up to 6 units.
UPPER-DIVISION COURSES

BCH 110A-BCH 110B-BCH 110C.
General Biochemistry. (4-4-4)
Description under Biochemistry

BIOL 111. Cell Biology. (4) S
Description under Biology

BIOL 115. Human Genetics. (3) S
Description under Biology

BIOL 121A. General Bacteriology and Microbiology. (3) F
Description under Biology

CHEM 112A-CHEM 112B-CHEM 112C.
Organic Chemistry. (4-4-4) Year
Description under Chemistry

NRSC 169. Human Growth and Development. (3) W
Description under Neuroscience

PHIL 188. Biomedical Ethics. (4) W
Description under Philosophy

STAT 105. Statistics for Biomedical Sciences. (2) F
Description under Statistics

GRADUATE COURSES

BMSC 200A-BMSC 200B.
Human Gross Anatomy. (5-5)
Lecture, two hours; laboratory, nine hours. Prerequisite(s): four-year standing in the Biomedical Sciences Program, M.S./Ph.D. status in the Biomedical Sciences Graduate Program, or consent of instructor. A detailed study of normal human anatomy as revealed by dissection. The significance of structure and of structural relationships will be examined as a basis for the study of clinical medicine. Baker, Leonard

BMSC 201. Modern Methods in Biomedical Research. (3)
Lecture, two hours; discussion, one hour. Prerequisite(s): graduate standing or consent of instructor. Theory and applications of methods and systems currently used in disease-related research of man and animals. Presented by faculty with expertise in the areas covering molecular, cellular, and genetic approaches to biomedical research.

BMSC 202. Molecular Basis of Disease. (3)
Lecture, two hours; discussion, one hour. Prerequisite(s): graduate standing or consent of instructor. Discussion of the molecular basis of disease with special emphasis on new developments and the broad application of approaches and techniques. Course is repeatable with consent of the student's advisory committee; may be applied only once toward core requirements.

BMSC 205. Human Microscopic Anatomy. (5)
Lecture, two hours; laboratory, nine hours. Prerequisite(s): four-year standing in the Biomedical Sciences Program, or M.S./Ph.D. status in the Biomedical Sciences Graduate Program, or consent of instructor. In-depth study of the microscopic anatomy of normal human tissues and organs. The course will emphasize the morphological basis of physiology. Walker

BMSC 210A-BMSC 210B. Human Physiology. (4-4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): four-year standing in the Biomedical Sciences Program, or M.S./Ph.D. status in the Biomedical Sciences Graduate Program, or consent of instructor. A detailed study of human organ system function. The course will consist of lectures and laboratory exercises dealing with the normal physiology of the cardiovascular, respiratory, renal and gastrointestinal systems and with the relationship of normal physiology to disease states. The laboratories will include experience in animal surgery and in the use of biological transducers and electronic recording equipment. Quinlan, Lyle

BMSC 220. Neurosciences. (5)
Lecture, three hours; laboratory, six hours. Prerequisite(s): four-year standing in the Biomedical Sciences Program, or M.S./Ph.D. status in the Biomedical Sciences Graduate Program or consent of instructor. Structure and function of the nervous system. This course emphasizes the interrelationships between anatomy, physiology, and biochemistry of the nervous system as a basis for understanding its function in health and disease. Baker, Cohen

BMSC 222 (E-Z). Special Topics in Biomedical Sciences. (2)
Lecture, one hour; discussion, one hour. Prerequisite(s): graduate standing or consent of instructor. For BMSC 222A: BMSC 224 or BIOL 128/MRSC 128 or consent of instructor. Oral presentations and intensive small-group discussion of selected topics in the area of special competence of each staff member. Course content emphasizes recent advances in the special topic area and varies accordingly. Course is repeatable.

BMSC 224. Medical Immunology. (4)
Lecture, three hours; laboratory, four hours. Prerequisite(s): four-year standing in the Biomedical Sciences Program, or M.S./Ph.D. status in the Biomedical Sciences Graduate Program, or consent of instructor. Introduction to the molecular and cellular basis of the human immune system including discussion of antibody structure/function and cell-mediated inflammatory reactions. This information will be integrated into concepts on the role of the immune system in host defense and various pathologic disease conditions, including organ transplantation, autoimmunity, immunodeficiencies, and viral diseases. Laboratory sessions will cover topics in immunohemostasis, hematology and diagnostic assays of immune competence.

BMSC 225A-BMSC 225B.
Medical Microbiology. (3-3)
Lecture, two and three hours; laboratory, three and hours. Prerequisite(s): BMSC 224 or equivalent; four-year standing in the Biomedical Sciences Program, or M.S./Ph.D. status in the Biomedical Sciences Graduate Program, or consent of instructor. A review of the major bacteria, viruses, fungi, and parasites pathogenic to man. Major mechanisms of microbial pathogenesis and the corresponding clinical manifestations, and the principles of prevention, diagnosis, and treatment of infectious diseases are presented. Laboratory exercises emphasize the methodology involved in the isolation and identification of these microorganisms. Schiller

BMSC 230A. General Pharmacology. (5)
Lecture, forty-nine hours per quarter. Prerequisite(s): fifth-year or M.S. or Ph.D. standing in Biomedical Sciences or consent of instructor. A study of the principles of pharmacology and their relationship to clinical medicine. Considers the major categories of drugs, mechanisms of drug action, toxicology, and the pharmacological
basis of therapeutics, and the effects of drugs on mammalian organ systems. Graded In Progress (IP) until BMSC 230A, BMSC 230B, and BMSC 230C are completed, at which time a final, Satisfactory (S) or No Credit (NC) grade is assigned. Byus, Johnson

**BMSC 230B. General Pharmacology. (0.5)** Lecture, five hours per quarter. Prerequisite(s): BMSC 230A; fifth-year or M.S. or Ph.D. standing in Biomedical Sciences or consent of instructor. A study of the principles of pharmacology and their relationship to clinical medicine. Considers the major categories of drugs, mechanisms of drug action, toxicology, the pharmacological basis of therapeutics, and the effects of drugs on mammalian organ systems. Graded In Progress (IP) until BMSC 230A, BMSC 230B, and BMSC 230C are completed, at which time a final, Satisfactory (S) or No Credit (NC) grade is assigned. Byus, Johnson

**BMSC 230C. General Pharmacology. (0.5)** Lecture, eight hours per quarter. Prerequisite(s): BMSC 230B; fifth-year or M.S. or Ph.D. standing in Biomedical Sciences or consent of instructor. A study of the principles of pharmacology and their relationship to clinical medicine. Considers the major categories of drugs, mechanisms of drug action, toxicology, the pharmacological basis of therapeutics, and the effects of drugs on mammalian organ systems. Graded Satisfactory (S) or No Credit (NC). Byus, Johnson

**BMSC 235A. Introduction to Psychiatry. (2)** Lecture, two hours. Prerequisite(s): BMSC 103; fifth-year standing in the Biomedical Sciences Program. A study of fundamental concepts of normal and abnormal sexuality and major psychiatric illnesses. Topics include depression, functional psychoses, organic mental disorders, and anxiety disorders. Graded In Progress (IP) until both BMSC 235A and BMSC 235B are completed, at which time a final, Satisfactory (S) or No Credit (NC) grade is assigned. Summerour

**BMSC 235B. Introduction to Psychiatry. (2)** Lecture, two hours. Prerequisite(s): BMSC 235A; fifth-year standing in the Biomedical Sciences Program. A study of fundamental concepts of normal and abnormal sexuality and major psychiatric illnesses. Topics include depression, functional psychoses, organic mental disorders, and anxiety disorders. Graded Satisfactory (S) or No Credit (NC). Summerour

**BMSC 240. General Pathology. (3)** Lecture, two hours; laboratory, three hours. Prerequisite(s): fourth-year standing in the Biomedical Sciences Program or consent of instructor. Human pathology covering basic alterations in cellular morphology and function in disease and their biochemical and clinical correlates. Atkinson

**BMSC 241. Preventive Medicine and Epidemiology. (2)** Lecture, one hour; seminar, one hour. Prerequisite(s): fifth-year standing in the Biomedical Sciences Program. Essentials of the epidemiological method and uses of epidemiology in medicine. Application of basic demographic and epidemiological statistics to the measurement of disease processes in populations. Graded Satisfactory (S) or No Credit (NC). Valtheim

**BMSC 245A. Pathophysiology of Disease. (12)** Lecture, eight hours; discussion, three hours; laboratory, three hours. Prerequisite(s): BMSC 240; fifth-year standing in the Biomedical Sciences Program or consent of instructor. Covers clinical manifestations and pathophysiology of disease and clinical pharmacology. Topics include cardiology, pulmonary disease, hematology, oncology, and gastroenterology. Graded Satisfactory (S) or No Credit (NC). Loo

**BMSC 245B. Pathophysiology of Disease. (10)** Lecture, six hours; discussion, three hours; laboratory, three hours. Prerequisite(s): BMSC 245A; fifth-year standing in the Biomedical Sciences Program or consent of instructor. Covers clinical manifestations and pathophysiology of disease and clinical pharmacology. Topics include infectious diseases, nephropathy, and endocrinology. Graded Satisfactory (S) or No Credit (NC). Loo

**BMSC 245C. Pathophysiology of Disease. (5)** Lecture, thirty-five hours per quarter; discussion, fifteen hours per quarter. Prerequisite(s): BMSC 245A, BMSC 245B, fifth-year standing in the Biomedical Sciences Program or consent of instructor. Covers clinical manifestations and pathophysiology of disease and clinical pharmacology. Topics include neurology, rheumatology, musculoskeletal diseases, allergy and immunology, and genetics. Graded Satisfactory (S) or No Credit (NC). Loo

**BMSC 251. Colloquium in Biomedical Sciences. (1)** Colloquium, one hour. Prerequisite(s): graduate standing in Biomedical Sciences or consent of instructor. Specialized discussions by staff and students on current research topics in biomedical sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BMSC 252. General Seminar in Biomedical Sciences. (3)** Seminar, one hour. Prerequisite(s): graduate standing. Oral presentations by staff and visiting scholars on current research topics in the field of biomedical sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BMSC 254. Graduate Seminar in Biomedical Sciences. (1)** Seminar, one hour. Prerequisite(s): graduate standing. Oral reports by graduate students on current research topics in biomedical sciences. Letter grades will be assigned to students who present a seminar; others will be graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BMSC 255A-BMSC 255B-BMSC 255C: BMSC 255A-BMSC 255B-BMSC 255C. Doctoring I. (3 1/2-3 1/2-3 1/2)** Discussion, thirty-six hours per quarter, three hours per week, three hours per week; clinic, zero hours per quarter; fifteen hours per quarter; fifteen hours per quarter. Prerequisite(s): for BMSC 255A: BMSC 255A; for BMSC 255B: BMSC 255B; for BMSC 255C: BMSC 255C; fourth-year standing in the Biomedical Sciences Program. Introduction to small-group discussion of clinical cases, using a problem-based learning format. Cases are chosen to introduce basic interviewing skills and performance of a normal physical examination and to reinforce material presented in other courses. Includes sessions in a clinical setting with a community physician preceptor. Graded Satisfactory (S) or No Credit (NC). Jafri

**BMSC 256A-BMSC 256B-BMSC 256C: BMSC 256A-BMSC 256B-BMSC 256C. Doctoring II. (5-5-2)** Discussion, four, four, and one hour; clinic, three hours. Prerequisite(s): BMSC 255A-BMSC 255B-BMSC 255C, for BMSC 256B: BMSC 256A; for BMSC 256C: BMSC 256B; fifth-year standing in the Biomedical Sciences Program. Small-group discussion of clinical cases, using a problem-based learning format. Cases are chosen to introduce advanced interviewing skills and to teach differential diagnosis. Includes sessions in a clinical setting with a community physician preceptor. Graded Satisfactory (S) or No Credit (NC). Hunt

**BMSC 257. Graduate Seminar in Cell, Molecular, and Developmental Biology. (1)** Seminar, one hour. Prerequisite(s): graduate standing. Lectures by visiting scholars on current research in cell, molecular, and developmental biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 257, BIOL 257, BMSC 257, ENFM 257, ENTX 257, NEU 257, NSC 257, and PLPA 257.

**BMSC 270A-BMSC 270B-BMSC 270C. Introduction to Patient Care. (2-2-2)** Seminar, two hours. Prerequisite(s): for BMSC 270A: BMSC 270A, for BMSC 270B: BMSC 270B, fifth-year standing in the Biomedical Sciences Program. Introduction to the principal methods of clinical interviewing and patient examination. Emphasis is placed on the techniques of medical history taking and on developing skills of physical diagnosis. Graded Satisfactory (S) or No Credit (NC). Van Hollen

**BMSC 287. Colloquium in Neuroscience. (1)** Colloquium, one hour. Prerequisite(s): for BMSC 270A: BMSC 270A, for BMSC 270B: BMSC 270B, fifth-year standing in the Biomedical Sciences Program. An interdisciplinary seminar consisting of student presentations and discussions of selected topics in neuroscience. Content and instructor(s) vary each time course offered. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 287, BIOL 287, CHEM 287, NSC 287, and PSYC 287. Hatton, in charge

**BMSC 289. Special Topics in Neuroscience. (2)** Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussions of selected topics in neuroscience. Content and instructor(s) vary each time course offered. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BMSC 290. Directed Studies. (1-6)** Research, three to eighteen hours. Prerequisite(s): graduate standing in Biomedical Sciences or consent of instructor. Experimental or literature studies on specifically selected topics under direction of a staff member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BMSC 297. Directed Research. (1-6)** Research, three to eighteen hours. Prerequisite(s): graduate standing in Biomedical Sciences or consent of instructor. Directed research in biomedical sciences performed prior to advancement to candidacy in preparation for dissertation projects. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**BMSC 299. Research for Dissertation. (1-12)** Research, three to thirty-six hours. Prerequisite(s): graduate standing in Biomedical Sciences or consent of instructor. Original research in the area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.
Biomedical Sciences Graduate Program

Michael B. Stemerman, M.D.,
Dean and Program Director
Program Office, B600 Statistics-Computer Bldg.
(909) 787-5707
http://biomed.ucr.edu

Professors
John H. Ashe, Ph.D. Neurosciences
   (Cell Biology and Neuroscience, and Psychology)
Craig V. Byus, Ph.D. Pharmacology
   (Biomedical Sciences and Biochemistry)
Helen L. Henry, Ph.D. Endocrinology
   (Biochemistry)
David A. Johnson, Ph.D. Pharmacology
   (Biomedical Sciences)
Richard A. Luben, Ph.D. Endocrinology
   (Biomedical Sciences and Biochemistry)
Anthony W. Norman, Ph.D. Endocrinology
   (Biomedical Sciences and Biochemistry)
Edward G. Platzer, Ph.D. Physiology
   (Biology and Neurosciences)
Paul M. Quinton, Ph.D. Physiology
   (Biomedical Sciences)
Neal L. Schiller, Ph.D. Microbiology/Immunology
   (Biomedical Sciences)
B. Glenn Stanley, Ph.D. Neurosciences
   (Cell Biology and Neuroscience, and Psychology)
Michael B. Stemerman, M.D. Vascular Biology
   (Biomedical Sciences)
Daniel S. Straus, Ph.D. Human Genetics
   (Biomedical Sciences and Biology)
Ameae M. Walker, Ph.D. Microanatomy
   (Biomedical Sciences)

Associate Professors
Richard A. Cardullo, Ph.D. Cell Biology
   (Biology)
Scott N. Currie, Ph.D. Neurosciences
   (Cell Biology and Neuroscience)
David A. Eastmond, Ph.D. Environmental Toxicology
   (Cell Biology and Neuroscience)
Andrew J. Grosovsky, Ph.D. Toxicology
   (Cell Biology and Neuroscience)
Christian Y. Lytle, Ph.D. Physiology
   (Biomedical Sciences)
John V.J. Shyy, Ph.D. Pharmacology/Physiology
   (Biomedical Sciences)

Professor Emerita
Mary Ann Baker, Ph.D. Neurosciences

Assistant Professors
Bruce N. Cohen, Ph.D. Neurosciences
   (Biomedical Sciences)
Margarita C. Currás-Collazo, Ph.D.
   Neurosciences (Cell Biology and Neuroscience)
Xuan Liu, M.D., Ph.D. (Biochemistry)

Manuela M. Martins-Green, Ph.D.
   Cell Signaling
   (Cell Biology and Neuroscience)

The multidisciplinary interdepartmental graduate program in Biomedical Sciences offers graduate instruction leading to a Ph.D. or combined M.D.-Ph.D.

The aim of the graduate program is to provide students with training that crosses traditional boundaries between scientific disciplines and allows them to address modern biomedical research questions. The objective is to train scientists who have a broad knowledge of basic medical sciences, have a high degree of expertise in an area of specialization, and who have effective teaching skills for a medical school or university environment.

The need for scientists who understand the interrelationships of various areas of medical science is readily apparent. For example, it is clearly advantageous for a scientist studying diabetes to understand the disease in depth. This requires a fundamental understanding of endocrinology (hormone secretion and action), cell biology (cell types that produce insulin and upon which insulin acts), biochemistry (insulin-receptor interactions, biochemical pathways regulated by insulin), genetics (genetic factors in the development of diabetes), immunology (autoimmune mechanisms in diabetes), and anatomy (vascular and cellular pathology). There is a growing need for scientists who can communicate among disciplines so that very effective research collaborations can be developed.

The program offers research specialization in Cell Biology/Physiology, Endocrinology/Pharmacology, and Neurosciences. Specific research areas in the Cell Biology/Physiology field include fluid and electrolyte pathophysiology in cystic fibrosis; molecular genetics of human cell response to environmental carcinogens; tumor suppressor genes in malignant melanoma; molecular basis of Down syndrome; factors controlling lymphocyte differentiation; mechanisms of action of cytotoxic lymphokines; physiological aspects of host-parasite interaction; and host defense mechanisms in infectious disease. Research areas in the Endocrinology/Pharmacology field include regulation and actions of the vitamin D endocrine system; mechanism of action of insulin and insulin-like growth factors; proactin as a growth factor in health and disease; hormonal and electric field regulation of bone development and growth; and mechanisms for carcinogenesis by tumor-promoting phorbol esters. Research areas in the Neurosciences field include studies of the hypothalamic control of homeostatic and sexual function; plasticity in the adult mammalian nervous system; chemical and electrophysiological mechanisms of synaptic transmission; and structure-function studies of ion channels.

Applicants should have completed an undergraduate degree in one of the physical or biological sciences and must submit scores from the Graduate Record Examination (GRE) General Test (verbal and quantitative). (GRE requirement not applicable to UCR Biomedical Sciences students applying for M.D.-Ph.D.)

Courses required for admission include one year each of general chemistry, organic chemistry, and biology and calculus. Core requirements can be completed in one year, with the latter tailored to the student's research interests. BCH 110A-BCH 110B (General Biochemistry), and BCH 110C or BIOL 107 are considered prerequisites to the core curriculum. Students who perform well on a biochemistry placement examination at the time of matriculation will not be required to enroll in BCH 110A-BCH 110B-BCH 110C.

Core requirements include:

1. BMSC 202
2. Three special topics courses (selected from BMSC 222, BCH 230, BIOL 281, or NRSC 289/BCH 289/BIOL 289/BMSC 289/ CHEM 289/ENTM 289/PSYC 289)
3. BMSC 252 (enrollment required each quarter)
4. BMSC 254 (enrollment required each quarter and presentation of at least one seminar per year)
5. BMSC 302 (two-quarter requirement, not required of M.D.-Ph.D. students)

Elective requirements require completion of any four courses from the following list:

BMSC 120, BMSC 200A and BMSC 200B (counts as two), BMSC 201, BMSC 205, BMSC 210A and BMSC 210B (counts as two), BMSC 220, BMSC 224, BMSC 225A and BMSC 225B (counts as one), BMSC 230A, BMSC 230B, BMSC 230C, BCH 210, BCH 211, BCH 212, BIOL 115,
The combined degree is offered to students admitted to the medical school phase of the Biomedical Sciences Program and to exceptional students from other four-year LCME-accredited medical schools. For students in the Biomedical Sciences Program, this track allows them to complete a B.S., M.D. and Ph.D. degree in 10 years. Normally, a student will complete the first two years of medical school, and will then spend approximately three years in the Ph.D. part of the program before completing the M.D. degree. However, the track is also offered to students who have completed the M.D. degree. UCR Biomedical Sciences students may apply for admission concurrently with their applications to the medical school phase or any time after acceptance to the medical phase. For these students only, the MCAT will be accepted in lieu of the GRE.

Students from other medical schools should apply in the fall of their sophomore or senior year. For those in the sophomore year, application must be accompanied by official permission for an appropriate leave of absence. The GRE requirement is the same as for regular Ph.D. students.

**Master’s Degree**

The Biomedical Sciences Graduate Group also offers a master’s degree program. No students will be admitted directly into the Program for work toward the master’s degree. However, a Plan I (Thesis Plan) or Plan II (Comprehensive Examination Plan) M.S. degree is available in special circumstances when work leading to the Ph.D. degree cannot be completed. The decision as to whether the master’s degree is an appropriate alternative to the Ph.D. degree will be made by the student’s advisory committee. This decision may be made at the end of the student’s first year of residence or it may be made at other times in a graduate student’s career, particularly at the time of the qualifying examination. The student, in consultation with his/her advisory committee, will choose either Plan I or Plan II program.

**Course Descriptions**

All Biomedical Sciences courses are listed and described under Biomedical Sciences.

Further information regarding graduate studies in Biomedical Sciences may be obtained from the Division of Biomedical Sciences.

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**BOTANY AND PLANT SCIENCES**

Subject abbreviation: BPSC

Elizabeth M. Lord, Ph.D., Chair
Department Office, 2132 Batchelor Hall
Graduate Student Affairs (800) 735-0717 or (909) 787-5621
Undergraduate Advising Center (909) 787-3579
http://cnas.ucr.edu/~bps/homepage.htm
MAJOR
The Departments of Botany and Plant Sciences, Plant Pathology, and Nematology participate in an interdisciplinary program leading to either a B.A. or B.S. degree in Botany/Plant Science. In addition, these departments and others participate in the Plant Biology Track within the interdisciplinary Biological Sciences major. In this program, students earn a B.A. degree in Biological Sciences. Course requirements for the Plant Biology Track are listed under the Biological Sciences major in this catalog.

Both majors are designed to provide students with basic knowledge in the natural sciences and in their chosen field of specialization.

Appropriate choice of courses within either major prepares students for employment and graduate training in a variety of fields including botany, ecology, genetics, nematology, plant breeding, plant pathology, plant physiology, and plant sciences.

These specialties can prepare students for teaching, research and other career opportunities in basic and applied botany and plant ecology, medical fields, biotechnology, agriculture extension, consultation or management, botanic garden, nursery, landscape and turf grass management, crop production and protection; and many related botanical and agricultural industries.

Courses prerequisite to the major, courses used to satisfy major requirements, and the 16 units (for B.S. degree) related to the major must be taken for letter grades. Students may elect to take other courses on a Satisfactory/No Credit basis. Refer to the Academic Regulations section of this catalog for additional information on S/NC grading.

Transfer Students
Transfer students majoring in Botany/Plant Science should make every effort to complete the following full-year sequences:

1. General chemistry, equivalent to CHEM 001A-CHEM 001B-CHEM 001C
2. Organic chemistry, equivalent to CHEM 112A-CHEM 112B-CHEM 112C
3. First-year calculus, equivalent to MATH 009A-MATH 009B
4. General biology, equivalent to BIOL 005A and BIOL 005B (and BIOL 005C, if available)
5. General physics with laboratory (calculus-based) equivalent to PHYS 002A, PHYS 002B, PHYS 002C or PHYS 040A, PHYS 040B, PHYS 040C

Degree Requirements
University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Natural and Agricultural Sciences in the Undergraduate Studies Section, for requirements that students must satisfy.

Some of the following requirements for the major may also fulfill some of the College's breadth requirements. Consult with a department advisor for course planning.

Major Requirements
The major requirements for the B.A. and B.S. degrees in Botany/Plant Science are as follows:

For the Bachelor of Arts
1. Life Sciences Core Curriculum (53–56 units)
   a) CHEM 001A-CHEM 001B-CHEM 001C
   b) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 021A-PHYS 021B-PHYS 021C
   c) CHEM 001A-CHEM 001B-CHEM 001C
   d) MATH 009A-MATH 009B (MATH 009C recommended)
   e) STAT 020 or STAT 100A or STAT 105 or STAT 120A
   f) BCH 100 or BCH 110A (BCH 110A strongly recommended)
2. Upper-division requirements (51 units)
   a) CHEM 112A-CHEM 112B-CHEM 112C
   b) BIOL 102
   c) BPSC 130/BIOL 130, BPSC 132/BIOL 132, BPSC 138/BIOL 138, BPSC 143/BIOL 143
   d) Two (2) units of BPSC 197 (Research for Undergraduates)
   e) Sixteen (16) units in one program of specialization (consult with a faculty advisor)
   f) STAT 020 or STAT 100A or STAT 120A (STAT 120A strongly recommended)

Programs of Specialization
Individual student career goals may be achieved by selection of a program of specialization within the diverse disciplines of botany and plant science. Adjustments within these programs can be made to accommodate students' interests.

1. Plant Genetics, Cellular, and Molecular Biology (Biotechnology):
   a) BIOL 100/ENTM 100
   b) BIOL 105, BIOL 109, BIOL 155/BIOL 155, BIOL 185/BIOL 185, BIOL 102, BIOL 110B
   c) BIOL 102, BIOL 105, BIOL 110B, BIOL 111, BIOL 115
   d) BPSC 120/PLPA 120

2. Organismal Botany/Plant Sciences (Anatomy, Biochemistry, Development, Morphology, Physiology, Systematics, Taxonomy):
   a) BPSC 130/ENSC 130/SWSC 130
   b) BPSC 134, BPSC 135
   c) BIOL 109, BIOL 134/PLPA 134
   d) BIOL 107A, BIOL 107B, BIOL 111
   e) BIOL 120/PLPA 120

   a) BPSC 102, BPSC 103, BIOL 120
   b) BPSC 134, BPSC 135
   c) BIOL 105, BIOL 109, BIOL 117/ENTM 117
   d) BIOL 120/PLPA 120

For the Bachelor of Science
1. Life Sciences Core Curriculum (53–56 units)
   (same as for the B.A. degree)
2. Upper-division requirements include the requirements for the B.A. and, in addition, 16 units in upper-division courses or substantive lower-division courses in one or more fields related to the major.

Transfer Students
Transfer students majoring in Botany/Plant Science should make every effort to complete the following full-year sequences:

1. General chemistry, equivalent to CHEM 001A-CHEM 001B-CHEM 001C
2. Organic chemistry, equivalent to CHEM 112A-CHEM 112B-CHEM 112C
3. First-year calculus, equivalent to MATH 009A-MATH 009B
4. General biology, equivalent to BIOL 005A and BIOL 005B (and BIOL 005C, if available)
5. General physics with laboratory (calculus-based) equivalent to PHYS 002A, PHYS 002B, PHYS 002C or PHYS 040A, PHYS 040B, PHYS 040C
4. Pest Management/Plant Pathology/Nematology:  
   BPSC 102, BPSC 103, BPSC 146, BPSC 150,  
   BCH 183, BIOL 120/MCBL 120/LPLA 120,  
   BIOL 120L/MCBL 120L/LPLA 120L,  
   BIOL 121A/MCBL 121A,  
   BIOL 121B/MCBL 121B,  
   BIOL 121L/MCBL 121L, BIOL 127/ENTM 127,  
   BIOL 134/LPLA 134, BIOL 134L/LPLA 134L,  
   BIOL 159/NE 159, ENSC 100, ENSC 100L,  
   ENTM 124, ENTM 129, ENTM 129L, NE 120,  
   SWSS 100L.

   Students planning a B.A. degree should sched-  
   ule the required language courses in place of  
   a series of electives. For the B.S. degree the  
   electives must include 16 units of upper-division  
   or substantive lower-division courses in a  
   field or fields related to the major.

   Information about this program is available in the Biological Sciences Undergraduate Advising Center (909) 787-3579.

**Minor**

The Minor in Botany/Plant Sciences allows students majoring in other departments to obtain in-depth training in Botany/Plant Sciences.

Requirements for the Minor in Botany/Plant Sciences are as follows:

1. BIOL 130/BPSC 130 (General Botany) (4 units)
2. One course (4 units) from the following:  
   BIOL 132/BPSC 132 (Plant Anatomy),  
   BIOL 138/BPSC 138 (Morphology of Vascular Plants), BIOL 143/BPSC 143 (Plant Physiology)
3. Twelve (12) to 20 units from the following:  
   ANTH 170/BPSC 170, BCH 153/BIOL 153/  
   BPSC 153, BCH 185/BPSC 185,  
   BIOL 132/BPSC 132, BIOL 138/BPSC 138,  
   BIOL 142/BPSC 122, BIOL 143/BPSC 143,  
   BIOL 155/BPSC 155, BPSC 102, BPSC 103,  
   BPSC 135, BPSC 144, BPSC 146, BPSC 148,  
   BPSC 150, BPSC 190, BPSC 197, BPSC 199

   Note: No more than 4 units of BPSC 190-199  
   may be used to fulfill this requirement.

   Courses used to fulfill the section 2 require-  
   ment cannot also be used to fulfill the section 3  
   requirement.

   See Minors under the College of Natural and  
   Agricultural Sciences in the Undergraduate  
   Studies section of this catalog for additional  
   information on minors.

**GRADUATE PROGRAM**

The Department of Botany and Plant Sciences offers programs leading to the M.S. degree in Botany or Plant Science, and to the Ph.D. degree in Botany or Plant Science (Plant Genetics).

Applicants who have a baccalaureate degree and who satisfy the general requirements of the University listed in the Graduate Studies section of this catalog are considered for admission to graduate status. Graduate Record Examination scores (verbal, quantitative, and analytical) must be submitted to the department for admission to the Ph.D. program; also, domestic applicants to the M.S. programs are required to submit these scores.

Regardless of the area of their major for the Baccalaureate degree, students are expected to have had, or complete soon after entering graduate school, a year course in general biology, general chemistry, organic chemistry, and physics; mathematics through integral calculus; and a course in genetics, biochemistry, and statistics. Credit from these courses does not count toward the graduate degree.

Each student should consult with the graduate advisor regarding educational goals and scheduling. When an area of specialization has been determined, a faculty advisor who will provide further counsel in outlining the student's program may be assigned.

**Master's Degree**

The master's degree may be earned under Plan I (Thesis Plan) or Plan II (Comprehensive Examination Plan). Students must meet all general requirements of the Graduate Division. The detailed course program is determined by the Guidance Committee after considering the specific interests of the student. Department requirements are:

**Plan I (Thesis)**

1. Three courses from Section I of either the Botany or the Plant Science M.S. list
2. Two courses from Section II of either the Botany or Plant Science M.S. list
3. At least 6 units from Section III of either the Botany or Plant Science M.S. list
4. Preparation of a thesis (not more than 12 units)

   If the student takes research courses from  
   Section IV, not more than 6 units may be  
   applied toward the degree. Students who have  
   taken courses comparable to those in Section  
   I during their baccalaureate training may have a  
   portion or all of this section waived. In such  
   instances, however, it is expected that their  
   programs include increased units in courses  
   from Sections II, III, and/or IV. Recommendations  
   for waivers should specify alternative courses and  
   should be sent to the Educational Advisory Committee  
   for approval.

   **Seminar Requirement**: All full-time stu-  
   dents in residence in the M.S. program must  
   enroll in the BPSC 250 and BPSC 260 seminars  
   during each quarter in which they are offered.  
   Part-time students must take one  
   BPSC 250 and one BPSC 260 seminar for  
   every 12 units of courses. Students may enroll  
   in an equivalent seminar course as a replace-  
   ment for the BPSC 260 Seminar. All students  
   must present at least one seminar and com-  
   plete at least two quarters of BPSC 240 (or  
   equivalent) during the master's program.

**Courses available for fulfilling the requirement for the M.S. degree**

**Section I — Upper-division undergraduate courses:**

- **Botany M.S.**  
  ANTH 170/BPSC 170,  
  BCH 153/BIOL 153/BPSC 153,  
  BCH 185/BPSC 185,  
  BIOL 111, BIOL 120/MCBL 120/LPLA 120,  
  BIOL 130/BPSC 130, BIOL 132/BPSC 132,  
  BIOL 138/BPSC 138, BIOL 142/BPSC 142,  
  BIOL 143/BPSC 143, BIOL 155/BPSC 155,  
  BIOL 158, BIOL 159, BIOL 160, BIOL 161,  
  BIOL 162, BIOL 163, BIOL 164, BIOL 165,  
  BIOL 166, BIOL 167, BIOL 168, BIOL 169,  
  BIOL 170, BIOL 171, BIOL 172, BIOL 173,  
  BIOL 174, BIOL 175, BIOL 176, BIOL 177,  
  BIOL 178, BIOL 179, BIOL 180, BIOL 181,  
  BIOL 182, BIOL 183, BIOL 184, BIOL 185,  
  BIOL 186, BIOL 187, BIOL 188, BIOL 189,  
  BIOL 190, BIOL 191, BIOL 192, BIOL 193,  
  BIOL 194, BIOL 195, BIOL 196, BIOL 197,  
  BIOL 198, BIOL 199, BIOL 200, BIOL 201,  
  BIOL 202, BIOL 203, BIOL 204, BIOL 205,  
  BIOL 206, BIOL 207, BIOL 208, BIOL 209,  
  BIOL 210, BIOL 211, BIOL 212, BIOL 213,  
  BIOL 214, BIOL 215, BIOL 216, BIOL 217,  
  BIOL 218, BIOL 219, BIOL 220, BIOL 221,  
  BIOL 222, BIOL 223, BIOL 224, BIOL 225,  
  BIOL 226, BIOL 227, BIOL 228, BIOL 229,  
  BIOL 230, BIOL 231, BIOL 232, BIOL 233,  
  BIOL 234, BIOL 235, BIOL 236, BIOL 237,  
  BIOL 238, BIOL 239, BIOL 240, (only if taken in addi-
tion to the required seminar units; see seminar requirement), BPSC 243

**Plant Science M.S.**

BCH 231/BPSC 231, BIOL 232/BPSC 232, BPSC 201 (for a maximum of 2 units), BPSC 220, BPSC 221, BPSC 222, BPSC 230L, BPSC 233, BPSC 237, BPSC 239, BPSC 240 (only if taken in addition to the required seminar units; see seminar requirement), BPSC 243

**Section IV** — Research courses: BPSC 290 and BPSC 297.

**Section V** — Thesis research: BPSC 299, Thesis for Plan I.

The normative time to the M.S. degree is seven quarters.

**Doctoral Degree**

The student must meet the general requirements of the Graduate Division. Course requirements for each student are determined by individual guidance committees and by the Educational Advisory Committee. During the first quarter in residence, students will meet with a guidance committee to choose an area of specialization in Botany or Botany (Plant Genetics) and two minor areas. Guidance committees and students should design individual course programs which meet the specific needs of the student and the requirements of the Ph.D. program. Course programs should prepare students for the qualifying examination and dissertation research. Either prior to entering the graduate program or before advancement to candidacy, students are expected to have completed an upper-division general course in the life sciences such as molecular biology, cell biology, physiology, ecology, etc., and two upper-division or graduate courses that have a major focus on plants, e.g., general botany, plant morphology, plant physiology, plant systematics, etc. Students are required to take a minimum of three graduate-level courses relevant to the specialization. Graduate course taken previously may be considered towards fulfilling this requirement. Students’ course programs must be approved by the Educational Advisory Committee. At the time of submission of course programs to the Educational Advisory Committee, the area of specialization and two minor areas to be covered on the qualifying examination should be specified. Students may petition to change the course program, area of specialization, or minor areas at any time. Advancement to candidacy depends upon the student passing a written and oral qualifying examination. The qualifying examination covers the student’s area of specialization and two minor areas. Granting of the degree is contingent upon acceptance of the dissertation by the candidate’s dissertation committee and satisfactory oral defense of the dissertation.

**Seminar Requirement.** All students in residence in the Ph.D. program must enroll in the BPSC 250 and 260 seminars during each quarter in which they are offered. Students may enroll in an equivalent seminar course as a replacement for the BPSC 260 seminar. Also, students must present at least one BPSC 250 seminar during the Ph.D. program in addition to the defense of the dissertation. The dissertation defense is normally presented in the BPSC 250 seminar series; however, if necessary, a special seminar may be scheduled for the defense. All students must complete at least two quarters of BPSC 240 (or approved similar equivalent that includes substantial student presentations) during the Ph.D. program.

**Foreign Language.** There is no foreign language requirement.

**Teaching Experience.** Students are required to obtain at least one quarter of teaching experience.

The normative time to the Ph.D. degree is fifteen quarters.

**LOWER-DIVISION COURSES**

**BPSC 011. Plants and Human Affairs. (4) F**

Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction for nonscience and non-Botany majors to the importance of plants and plant products in the shaping of human affairs and civilization. Covers the origin and practice of agriculture; the utilization of plant products; the latest agricultural advances, including genetic engineering; and the current agricultural and social issues. Plants and plant products are examined during class demonstrations and exercises. Huang

**BPSC 031. Spring Wildflowers. (4) S**

Lecture, three hours; laboratory, three hours; one Saturday field trip. Prerequisite(s): none. General approach to the study of vegetative and floral features of plants as a means of identification and botanical classification of major plant families in Southern California. Secondary emphasis on the field biology of flowering plants.

**UPPER-DIVISION COURSES**

**BPSC 102. Tropical and Subtropical Horticulture. (4) F, Even Years**

Lecture, four hours; occasional field trips. Prerequisite(s): BIOL 130/BPSC 130 or consent of instructor. Studies of the important tropical and subtropical crops of the world, emphasizing fruits, but excluding citrus, with special reference to their botany, climatic adaptation, and culture. Waines

**BPSC 103. Crop Ecology. (4) W, Odd Years**

Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing in plant sciences or related discipline in the College of Natural and Agricultural Sciences or consent of instructor. Analysis of cropping systems with emphasis on the physics of terrestrial environments, the responses of crops to these environments, and crop adaptation, management, and improvement. Hall

**BPSC 112. Systemsatics. (4) F**

Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005C or equivalent. Principles and philosophy of classification. Topics include phylogenetic and phenetic methods, species concepts, taxonomic characters, evolution, hierarchy of categories, and nomenclature. Cross-listed with BIOL 112 and ENMT 112. Heraty

**BPSC 122. Restoration Ecology. (4) W**

Lecture, three hours; two one-day field trips; three half-day field trips. Prerequisite(s): BIOL 005C, BIOL 117, CHEM 112C, STAT 020 or STAT 100A (may be taken concurrently); or consent of instructor. BIOL 102 recommended. An examination of the basic ecological principles related to land restoration. Topics include enhanced succession, plant establishment, plant adaptations, ecotypes, weed colonization and competition, nutrient cycling, functions and reintroduction of soil microorganisms, restoration for wildlife, and the determination of successful restoration. Includes field trips to restored sites. Cross-listed with BIOL 142. Allen

**BPSC 130. General Botany. (4) F,W**

Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005A-BIOL 005B-BIOL 005C; BCH 100 or BCH 110A-BCH 110B-BCH 110C; MATH 009A-MATH 009B; PHYS 002A-PHYS 002B, STAT 020 or STAT 100A or equivalent; or consent of instructor. Plants as functional organisms. Includes a brief survey of plants and plant-like organisms; then focuses on flowering plants as a model system in which to define plants; to understand their structure, function, reproduction, and evolution; and to define their role in nature. Cross-listed with BIOL 130. Heath, Holt

**BPSC 132. Plant Anatomy. (5) F**

Lecture, three hours; laboratory, six hours. Prerequisite(s): BIOL 005A and BIOL 005B, or consent of instructor. Functional and developmental aspects of plant cell, tissue, and organ structure. All aspects of the flowering plant life cycle are covered from germination to pollination and fruit and seed development. Cross-listed with BIOL 132. DeMason

**BPSC 134. Soil Conditions and Plant Growth. (4) F**

Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 130/BPSC 130, ENSC 100; or consent of instructor. A study of the chemical, physical, and biological properties of soils and their influence on plant growth and development. Topics include soil-plant water relations; fundamentals of plant mineral nutrition; soil nutrient pools and cycles; soil acidity, alkalinity, salinity and sodicity, root symbioses and rhizosphere processes. Cross-listed with ENSC 134 and SWSC 134.

**BPSC 135. Plant Cell Biology. (3) S, Odd Years**

Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005A-BIOL 005B, BIOL 005C, BCH 100 or BCH 110C; or consent of instructor. A study of the chemical, physical, and biological properties of plants and their influence on plant growth and development. Topics include soil-plant water relations; fundamentals of plant mineral nutrition; soil nutrient pools and cycles; soil acidity, alkalinity, salinity and sodicity, root symbioses and rhizosphere processes. Cross-listed with ENSC 134 and SWSC 134.

**BPSC 136. Morphology of Vascular Plants. (4) S**

Lecture, two hours; laboratory, six hours. Prerequisite(s): BIOL 005A-BIOL 005B-BIOL 005C or consent of instructor. Comparative morphology and evolution of vascular plants studied from the viewpoint of both fossil and living representatives and with a focus on the Angiosperms. Cross-listed with BIOL 130. Lord

**BPSC 143. Plant Physiology. (4) W**

Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005A-BIOL 005B-BIOL 005C or equivalent; or consent of instructor. A survey of the fundamental principles of plant physiology.
including photosynthesis, respiration, water relations, mineral nutrition, growth, morphogenesis, plant hormones, dormancy, and senescence. Cross-listed with BIOL 143. Madore.

**BPSC 144. Botany. (4) S, Even Years**
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 105C, BIOL 130/BIOL 150; consent of instructor. Introduction to the nature and causes of plant variation within and among species and the experimental methods used to gather such information. Topics include the integration of data with evolutionary hypotheses to determine taxonomic and evolutionary relationships among plant species.

**BPSC 146. Plant Ecology. (4) S, Odd Years**
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 105C, BIOL 130/BIOL 150; consent of instructor. Fundamentals of plant ecology emphasizing community ecology, environment, life histories, population dynamics, species interactions, succession, disturbance, and special topics in applied ecology. Holm.

**BPSC 148. Quantitative Genetics. (4) F**
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 102; STAT 100B or STAT 120A; consent of instructor. An examination of approaches to studying the genetic basis of polygenic, metric traits. Topics include types of gene action, partitioning of variance, response to selection, and inferring the number and location of quantitative trait loci. Xu.

**BPSC 150. Principles of Plant Breeding. (4) W, Even Years**
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 102; STAT 100A or STAT 120A recommended. Application of the principles of classical, quantitative, and molecular genetics to the development of improved cultivars of crop plants.

**BPSC 153. Plant Biotechnology. (4) F, Odd Years**
Lecture, one hour; discussion, one hour; laboratory, six hours. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 102; upper-division standing; consent of instructor. A study of modern techniques in plant genome modification. Topics include nucleic acid cloning and sequencing, plant tissue culture and genetic transformation, controlled-environment plant growth, gene mapping, and germplasm collections. Also explores the history of plant biotechnology, economic, agricultural, nutritional, medicinal, and societal relevance; and regulatory issues. Cross-listed with BCH 153 and BIOL 153. Credit is awarded for only one of BIOL 153/BCH 153/BIOL153 or BIOL 109. Close.

**BPSC 155. Chromosomes. (4) F**
Lecture, three hours; discussion, one hour; prerequisite(s): BIOL 102; consent of instructor. An examination of the structure, function, and behavior of eukaryotic chromosomes. Cross-listed with BIOL 155. Lukaszewski.

**BPSC 170. Ethnobotany. (4) S**
Lecture, two hours; seminar; one hour; discussion, one hour. Prerequisite(s): BIOL 130/BIOL 130; consent of instructor. Introduces students to ethnobotanical research by reviewing selected ethnobotanical studies. Topics covered include fundamental principles of ethnobotany; the search for new medicines and other products made from plants; the role of humans in plant evolution, and the impact of plants on human cultures. Discus- sions focus on the past and present role of humans in plant conservation and the search for sustainable management practices in agriculture and forestry. Seminars by invited guests and enrolled students present selected topics in ethnobotany. Cross-listed with ANTH 170. Gómez-Pompa.

**BPSC 185. Molecular Evolution. (4) S, Odd Years**
Lecture, two hours; discussion, two hours. Prerequisite(s): BIOL 110C or BIOL 107A; BIOL 108 recommended. Explores the evolution of genes, proteins, and genomes at the molecular level. Focuses on the processes that drive molecular evolutionary change. Attention also given to the analysis of molecular data within the framework of evolutionary theory. Cross-listed with BCH 185. Clegg, Dupigczyk.

**BPSC 190. Special Studies. (1-5) F, W, S**
Variable hours. Lecturer, laboratory, or field work designed to meet special curricular needs. A written proposal signed by the supervising faculty member must be approved by the major advisor and the Department Vice Chair. A written report must be filed. Course is repeatable but total credit toward graduation may not exceed 6 units.

**BPSC 197. Research for Undergraduates. (4) F, W, S**
Individual research, three to twelve hours. Prerequisite(s): upper-division standing; consent of instructor. Individual research conducted under the direction of a Botany and Plant Science faculty member. A written proposal must be approved by the supervising faculty member and undergraduate advisor. A written report must be filed with the supervising faculty member at the end of the quarter. Course is repeatable.

**BPSC 199. Senior Research. (2-4) F, W, S**
Laboratory, six to twelve hours. Prerequisite(s): senior status; a GPA of 3.2 or better in upper-division courses in Botany/Plant Science and Biology; consent of instructor. Individual research on a problem relating to Botany/Plant Science. A written proposal signed by the supervising faculty member must be approved by the major advisor and the Department Vice Chair. A written report must be filed with the supervising faculty member. Course is repeatable but total credit toward graduation may not exceed 9 units.

**BPSC 201 (E-Z). Methods in Plant Biology. (1-2) F, S**
Laboratory, three to six hours. Prerequisite(s): consent of instructor. Theory and principles of instruments and laboratory techniques applicable to research in the plant sciences. Experiments provide experience in the use of laboratory instruments and techniques including applications and limitations. O. Plant Cell Protoplast Electroporation R. Plant Genetic Library Construction T. Characterization of Plant Complex Carbohydrates. Nothnagel U. Basic Fluorescence Techniques in Plant Biology Nothnagel V. Plant Carbohydrate and Amino Acid Analysis X. Stress Cell Electrophoresis. Roose.

**BPSC 210. Methods in Arabidopsis Research. (4) S**
Lecture, one hour; discussion, one hour; laboratory, six hours. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 102; consent of instructor. A study of modern techniques used in Arabidopsis research. Topics include plant growth conditions, pest control, genetic crosses, chemical and insertional mutagenesis, genetic mapping techniques, nucleic acid isolation and manipulation, transformation, and internet resources.

**BPSC 220. Physiology of Tree Crop Productivity. (3) F, Odd Years**
Lecture, three hours. Prerequisite(s): BIOL 143/BIOL 143 or consent of instructor. Study of the physiological processes underlying crop production in fruit trees with special emphasis on the influences exerted by horticultur- al practices and the environment. Lovatt.

**BPSC 221. Advanced Plant Breeding. (4) S, Even Years**
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 150 and either BIOL 143 or consent of instructor. Advanced treatment of plant breeding theory and practice including development and use of information on inheritance of traits; choice of breeding plans; breeding for yield, quality, disease and stress resis- tance; and use of biotechnology. Roose.

**BPSC 222. Origins of Agriculture and Crop Evolution. (3) W, Odd Years**
Lecture, three hours. Prerequisite(s): BIOL 102, BIOL 130/BIOL 130; consent of instructor. Analysis of origins of agriculture in the Near East, China, the New World, and Africa. Survey of domestication and evolution of major crop plants and animals. Waines.

**BPSC 223. Applied Evolutionary Genetics. (4) W, Odd Years**
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 105, BIOL 150; consent of instructor. An in-depth exploration of evolutionary changes resulting from anthropogenic activities, focusing on genetic changes in populations that affect human well-being. Examines current topics such as conservative genetics, evolution of resistance, and evolutionary impacts of changing technol- ogy. Readings in the primary literature and popular media interpretations of that literature. Elstrand.

**BPSC 230L. Cytogenetics Laboratory. (3) S, Odd Years**
Laboratory, nine hours. Prerequisite(s): BIOL 155/BIOL 155 or equivalent. An advanced laboratory course in cyto- genetics covering current methods of fixation, staining, and observation of chromosomes in eukaryotic organisms. Topics include methods for observation of polytene chromosomes of Drosophila, chromosome banding tech- niques, and in situ hybridization. Lukaszewski.

**BPSC 231L. The Plant Genome. (4) F, Odd Years**
Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 100, BIOL 107A; BCH 110A-BCH 110B-BCH 110C; consent of instructor. Gives students an appreciation for the structure of the plant nuclear, chloroplast, and mitochondiral genomes. Gene structure, regulation of gene expression, transposons, and methods of gene introduction are also emphasized. Cross-listed with BCH 231. Bailey-Serres, Walling.

**BPSC 232. Plant Development. (4) W**
Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 102; BIOL 130/BIOL 130; consent of instructor. An examination of plant development, with emphasis on the genetic mech- anism used in patterning plant form. Topics are taken from current literature and focus on molecular and cellu- lar mechanisms. Cross-listed with BIOL 232. Springer.

**BPSC 233. Molecular Responses of Plants to the Environment. (4) S, Even Years**
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 107A; BIOL 143/BIOL 143; consent of instructor. Molecular-level responses to the environment; mechanisms of gene regulation, including those involving plant hormones; and inheritance of these responses and regulatory mechanisms will be discussed. Environmental
BPSC 237. Plant Cell Biology. (4) F
Lecture, three hours; discussion, one hour.
Prerequisite(s): BIOL 107A or BIOL 111 or BIOL 143/BSAD 143 or BIOL 100 or their equivalents, or consent of instructor. Studies the structure, function, and dynamics of plant cell division, expansion, and specialization. Emphasis on aspects unique to plants including cytoskeletal and cell plate dynamics during cytokinesis, intracellular trafficking and wall-dynamics during expansion, and targeting to chloroplasts and vacuoles during specialization. Nothnagel, Huang

BPSC 239. Plant Metabolism. (3) W
Lecture, three hours. Prerequisite(s): consent of instructor. Recent and important advances in plant metabolism related to organelle physiology and carbon assimilation. Madore

BPSC 240. Special Topics in Plant Biology. (2) F,W,S
Seminar, two hours. Prerequisite(s): consent of instructor. Discussion of current literature within special areas of plant science. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 243. Environmental Plant Physiology. (4) S, Odd Years
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 143/BSAD 143 or BIOL 103. Analysis of theoretical and experimental aspects of plant responses to environment. Emphasis on plant-water relations, plant temperature relations, photosynthesis, and respiration at the whole plant and plant organ levels of organization. Hall

BPSC 250. Seminar in Plant Biology. (1) F,S
Seminar, one hour. Prerequisite(s): graduate standing or consent of instructor. Intensive study of selected topics in plant biology. Letter grades are assigned to students who present formal seminars. Other students receive Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 252. Special Topics in Botany/Plant Science. (1) F,W,S
Seminar, one hour. Prerequisite(s): graduate standing and consent of instructor. Oral presentations and intensive small-group discussion of selected topics in the area of special competence of each staff member. Course content will emphasize recent advances in the special topic area and will vary accordingly. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 257. Graduate Seminar in Cell, Molecular, and Developmental Biology. (1)
Seminar, one hour. Prerequisite(s): graduate standing. Lectures by visiting scholars on current research in cell, molecular, and developmental biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 251, BIOL 257, BMSC 257, ENT 257, ENLY 257, MISM 257, and PLPA 257.

BPSC 260. Seminar in Plant Physiology, Botany, or Genetics. (1) W
Seminar, one hour. Prerequisite(s): graduate standing or consent of instructor. Lectures, discussions, and demonstrations by students, faculty, and invited scholars on selected subjects concerned with the principles of plant physiology, botany, or genetics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 261. Colloquium in Recombinant DNA. (1) W,S
Seminar, one hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports by visiting scholars, faculty, and students on current research topics in recombinant DNA. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 261, BIOL 261, ENMT 261, and PLPA 261.

BPSC 280. Maya Subsistence and Biodiversity. (2-12)
Lecture, ten hours per quarter; discussion, ten hours per quarter. Prerequisite(s): graduate standing or consent of instructor. Design of a field course based on an interdisciplinary research program on the biodiversity of the Maya region of Mexico and the subsistence systems of the present and ancient Maya people. Includes independent research, lecture, readings, discussions, and visits to different field projects, research institutions, protected areas, and agroecosystems in the region. There is a fee associated with this course; fellowships may be available. See instructor for details. Graded Satisfactory (S) or No Credit (NC). Gómez-Pompa

BPSC 290. Directed Studies. (1-6) F,W,S
Individual study, three to eighteen hours. Prerequisite(s): consent of instructor. Library, laboratory, or field studies conducted under the direction of a faculty member. Designed to meet special or unexpected curricular needs in areas of plant biology not covered by formal course work. Students who complete assigned extra work receive letter grades; other students receive Satisfactory (S) or No Credit (NC) grades. Course is repeatable.

BPSC 291. Individual Study in Coordinated Areas. (1-6) F,W,S
Prerequisite(s): graduate standing. A program of study designed to advise and assist candidates who are preparing for examinations. Up to 6 units may be taken prior to the master’s degree. Up to 12 units may be taken prior to advancement to candidacy for the Ph.D. Graded Satisfactory (S) or No Credit (NC). Course is repeatable upon recommendation of the instructor.

BPSC 292. Concurrent and Advanced Studies in Botany and Plant Sciences. (1-4)
Outside research, three to twelve hours. Prerequisite(s): consent of instructor. Electured concurrently with an appropriate undergraduate course, but on an individual basis. Devoted to one or more graduate projects based on research and criticism related to the course. Faculty guidance and evaluation is provided throughout the quarter. Course is repeatable.

BPSC 297. Directed Research. (1-6) F,W,S
Outside research, three to eighteen hours. Prerequisite(s): graduate standing or consent of instructor. Individual research conducted under the direction of a Botany and Plant Sciences faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

BPSC 299. Research for Thesis or Dissertation. (1-12) F,W,S
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PROFESSIONAL COURSE

BPSC 302. Teaching Practicum. (1-4) F,W,S
Prerequisite(s): graduate standing and appointment as Teaching Assistant. Supervised teaching of Botany/Plant Science courses including laboratory and/or discussion sections. Graded Satisfactory (S) or No Credit (NC). Course is repeatable for credit but units not applicable toward degree unit requirements.

BUSINESS ADMINISTRATION

Subject abbreviation: BSAD

Bajs M. Dodin, Ph.D., Chair
Committee Office, 158 Anderson Hall
(909) 787-4551; [http://www.agsm.ucr.edu](http://www.agsm.ucr.edu)

Committee in Charge
Bajs M. Dodin, Ph.D. (Management)
John Gerdes, Ph.D. (Management)
Sarkis Khoury, Ph.D. (Management)
Jonathan Nagler, Ph.D. (Political Science)
Glória González-Rivera, Ph.D. (Economics)
Raymond L. Russell, III, Ph.D. (Sociology)
Patricia O’Brien, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio
Donald H. Dye, J.D.
Dean, The A. Gary Anderson Graduate School of Management, ex officio

Faculty
(See Management Faculty)

MAJORS

The B.S. in Business Administration is designed to educate students in the art and science of management. The program prepares graduates to become tomorrow’s business leaders by equipping them with the ability to identify, analyze, and solve complex business problems. Thus, the curriculum is built on strong business fundamentals with a foundation of course work in the humanities, social, and natural sciences.

The B.S. in Business Administration is a two-year upper-division major offered jointly by The A. Gary Anderson Graduate School of Management (AGSM) and the College of Humanities, Arts, and Social Sciences (CHASS). Students can enroll in a pre-Business status and are advised in CHASS during their freshman and sophomore years. The Pre-Business curriculum includes the prerequisites to the major and the college breadth requirements. After admission to the major, students are advised by AGSM. The B.S. degree in Business Administration is conferred by CHASS.

A limited number of students are accepted into the Business Administration major, chosen according to overall GPA. Students must apply for the major when they have completed not less than 75 and not more than 120 quarter units of college work. Final acceptance into the major is based on completion of all prerequisites and breadth requirements within a 120 quarter unit limit, a GPA above 2.0 in prerequisites, and a cumulative GPA of at least 2.5. The cumulative GPA requirement is effective for entering freshmen beginning Fall 2000 and for entering transfer students beginning Fall 2002. (Students who have not completed...
the foreign language requirement may be accepted into the program, but they must complete the requirement before graduation. Exceptions to the 120 quarter unit maximum must be requested by petition.

Students are encouraged to participate in at least one internship during their junior or senior year. Students interested in international business are encouraged to consider opportunities for study through the Education Abroad Program, in their junior year.

Outstanding academic achievement is recognized by the awarding of the Delta Sigma Pi Scholarship Key to a graduating senior. The Wall Street Journal Student Achievement Award, along with other awards, is also presented on an annual basis.

Degree Requirements

University Requirements

See the Undergraduate Studies Section for requirements that all students must satisfy.

College Requirements

Students must fulfill all breadth requirements of the College of Humanities, Arts, and Social Sciences or the Intersegmental General Education Transfer Curriculum prior to transferring to the University of California. See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The following are requirements leading to the B.S. degree in Business Administration. At least 50 percent of business course requirements must be completed at UCR.

Business Administration Major

1. Preparation for Business Administration major (41-44 units)
   a) General prerequisites (may be used to satisfy breadth requirements)
      (1) ECON 002, ECON 003
      (2) CS 008
      (3) STAT 048 or PSYC 011 (or equivalent)
      (4) SOC 110A or PSYC 012 or ANTH 175B or ECON 111 (or equivalent)
      (5) MATH 022, 023 (or equivalents)
   b) Major prerequisites (may not be used to satisfy breadth requirements)
      (1) BSAD 010
      (2) BSAD 020A, BSAD 020B

   The major requirements for the B.S. in Business Administration are as follows:

   2. Upper-division major requirements (72 units)
      a) ECON 102A, ECON 103A
      b) BSAD 121/STAT 121
      c) Two courses from
         (1) BSAD 150/SOC 150, BSAD 151/SOC 151
         (2) BSAD 142/PSYC 142
      d) BSAD 182/POSC 182 or BSAD 186/POSC 186
      e) BSAD 116/PHIL 116
      f) BSAD 134/ECON 134
      g) BSAD 110, BSAD 126, BSAD 163, BSAD 170, BSAD 184
      h) An additional 20 units of Business Administration elective courses excluding BSAD 190. See Department for a list of approved Business Administration elective courses.

Majors with Administrative Studies Components

B.A. degrees are offered in Economics, History, Art History, Political Science, and Sociology with Administrative Studies. A B.S. degree is offered in Sociology with Administrative Studies. Specified departmental requirements are listed under respective departmental listings.

1. All requirements of the College of Humanities, Arts, and Social Sciences
2. Specified requirements of the cooperating department, to include at least 36 upper-division units in that discipline
3. Administrative Studies requirements (37 units)
   a) Four lower-division courses (17 units)
      (1) BSAD 010 and BSAD 020A
      (2) STAT 048 or equivalent (may be used to satisfy breadth requirements)
      (3) CS 008 (may be used to satisfy breadth requirements)
   b) Two upper-division courses (8 units) from the list below:
      (1) ECON 102A or ECON 130 or ECON 162/BSAD 162
      (2) PSYC 140 or PSYC 142/BSAD 142
      (3) SOC 150/BSAD 150 or SOC 151/BSAD 151 or SOC 171
      (4) POSC 181 or POSC 182/BSAD 182 or POSC 183
      (5) ANTH 127 or ANTH 131

   These two courses must be outside the discipline of the cooperating major and cannot be courses included as part of the three-course Business Administration track or their cross-listed equivalents.

   c) A three-course track (12 units) in Business Administration courses from one of the following:
      (1) Organizations (General): BSAD 105/ANTH 105, BSAD 150/SOC 150, BSAD 151/SOC 151, BSAD 176/SOC 176
      (2) Human Resources Management/Labor Relations: BSAD 142/PSYC 142, BSAD 152/ECON 152, BSAD 153/ECON 153, BSAD 155, BSAD 157
      (3) Business and Society: BSAD 116/PHIL 116, BSAD 161, BSAD 182/POSC 182, BSAD 186/POSC 186
      (4) Marketing: BSAD 110, and two from BSAD 112, BSAD 113, BSAD 114 or BSAD 117
      (5) Managerial Accounting/Taxation: BSAD 163, and two from BSAD 166, BSAD 168A, or BSAD 168B
      (6) Financial Accounting: BSAD 163, BSAD 165A, BSAD 165B
      (7) Finance: BSAD 134/ECON 134 and two from BSAD 135A, BSAD 136, BSAD 137, BSAD 138, BSAD 139
      (8) Management Information Systems: BSAD 170, BSAD 171, BSAD 173
      (9) Production Management: BSAD 121/STAT 121, and two from BSAD 122, BSAD 126, BSAD 127/STAT 127

Minor

Prerequisites for the minor in Business Administration are as follows.

1. Three lower-division courses (12 units) (must be completed with no grade lower than "C"): BSAD 020A, ECON 003, STAT 048

Requirements for the minor in Business Administration are as follows:

2. Six upper-division courses (24 units):
   a) Four courses from the following: BSAD 110, BSAD 116/PHIL 116, BSAD 121/STAT 121, BSAD 126, BSAD 134/ECON 134, BSAD 163, BSAD 170
   b) Two additional upper-division Business Administration courses.
BSAD 010. Introduction to Business. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): none. Provides an overview of the field of business administration. Areas covered include business goals and strategies, functional areas of business and their integration in policy and decision making, social responsibility, computers in business, and business trends and challenges including the international dimension.

BSAD 020A. Principles of Accounting I. (4)
Lecture, three hours; discussion, one hour: Study of the concepts and techniques for measurement and communication of financial information. An introduction to accounting theory and practice as related to the single proprietorship, partnership, and corporation. Procedures used in preparing various financial statements.

BSAD 020B. Principles of Accounting II. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): BSAD 020A or equivalent. Continuation of study of accounting principles with emphasis on partnerships and corporations. Topics include stock and bond issuances, present value concept as related to accounting, introduction to consolidation and intercompany invests, special financial statements and financial statement analysis, and partnership formation and liquidation.

BSAD 105. Organizations as Cultural Systems. (4)
Lecture, three hours; outside reading, three hours. Examines the role of culture in the formation and management of complex bureaucratic organizations. Covers types of organizations and organizational cultures, the impact of a cultural environment, and problems posed by rapid cultural change. Cross-listed with ANTH 105.

BSAD 110. Introduction to Marketing. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): upper-division standing or consent of instructor. An introduction to the role of marketing in society with emphasis on concepts, marketing methods, and institutions.

BSAD 112. Consumer Behavior. (4)
Lecture, three hours; outside readings and projects, three hours.
Prerequisite(s): BSAD 110. Provides a basic understanding of the general models of choice behavior as it relates to marketing decision making. Emphasis is on motivation, perceptions, learning, and social forces as they impact on the choice process.

BSAD 113. Marketing Institutions. (4)
Lecture, three hours; outside readings and projects, three hours.
Prerequisite(s): BSAD 110. The concepts and strategies relating to the delivery of consumer goods and services. The management of marketing activities within the channels of distribution will be the main topic of study with emphasis upon retail and wholesale institutions.

BSAD 114. Marketing in a Global Environment. (4)
Lecture, three hours; outside research, two hours; term paper, one hour.
Prerequisite(s): BSAD 110. Covers the theory and practice of marketing across national borders. Provides an understanding of global marketing environments and examines the development of marketing strategies to maximize growth of global companies.

BSAD 115. Marketing Research. (4)
Lecture, three hours; outside research, three hours.
Prerequisite(s): BSAD 110. Covers types and sources of marketing information, the marketing research process, and techniques of data collection and analysis, including consumer and customer surveys and test marketing. Examines both quantitative and qualitative research with analysis of the values and limitations of data. Emphasis is placed on evaluation and interpretation of results.

BSAD 116. Business Ethics. (4)
Lecture, three hours; discussion, three hours.
Prerequisite(s): upper-division standing or consent of instructor. An inquiry into some of the moral issues arising from business life, such as conflicts of interest, responsibility to consumers, corporate culture and character, and the morality of competition. The history of ethics and the history of business as an institution are considered. Cross-listed with PHIL 116.

BSAD 117. Advertising. (4)
Lecture, three hours; outside readings and projects, three hours.
Prerequisite(s): BSAD 110. Basic concepts and functions of advertising with emphasis on media selection, message design, and effectiveness measurement.

BSAD 121. Introduction to Management Science. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): MATH 023 and CS 008; or their equivalent, upper-division standing. Survey of deterministic and probabilistic models for decision making. Topics include linear programming and extensions, networks, dynamic programming, decision trees, queueing models, and simulation. Use of these models in decision making are discussed. Use of the computer is emphasized. Cross-listed with STAT 121.

BSAD 122. Linear Programming with Applications. (4)
Lecture, three hours; homework problems and projects, three hours.
Prerequisite(s): BSAD 121/STAT 121 or equivalent. Many real-life decision problems give rise to linear programs with special structures, network flow problems, integer programs, and large-scale programs. Theory and algorithms of these models are presented and applied to various decision problems in management. Use of computer packages is emphasized.

BSAD 126. Production and Operations Management. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): BSAD 121/STAT 121 or equivalent. Deals with the issues of design and control of production systems in manufacturing and service organizations. Covers product and process selection, capacity planning, layout design, project and job scheduling, inventory control, material planning, and quality control.

BSAD 127. Introduction to Quality Improvements. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): STAT 048 or consent of instructor. Explores Deming's 14 points for management, graphical methods, fishbone diagram, Pareto analysis, control charts for attributes and variables, cusum and moving average charts, process-capability economic design, acceptance sampling, Taguchi method, parameter design, tolerance design, reliability, hazard rate, censoring, accelerated life testing. Cross-listed with STAT 127.

BSAD 134. Corporate Finance and Investment. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): ECON 003 or ECON 003H; upper-division standing. BSAD 020B recommended. Covers the foundation materials for both corporate financial management, and investment and portfolio analysis. Topics include time value of money, capital budgeting, capital structure, dividend policy, portfolio theory, CAPM, and market efficiency. Cross-listed with ECON 134.

BSAD 135A. Corporate Finance: Theory and Cases I. (4)
Lecture, three hours; extra reading, one hour; term paper, two hours.
Prerequisite(s): BSAD 134/ECON 134. The course is the first part of intermediate corporate financial management. It covers the optimal corporate financial decisions, including capital budgeting, capital structure decisions and dividend policy. Cases as well as theory will be used to study these topics.

BSAD 135B. Corporate Finance: Theory and Cases II. (4)
Lecture, three hours; extra reading, one hour; term paper, two hours.
Prerequisite(s): BSAD 135A. The course is the second part of intermediate corporate financial management. It covers the analysis of different financing instruments, including lease financing, the application of option pricing theory in corporate finance, financial planning, working capital management, and mergers and acquisitions. Cases as well as theory will be used to study these topics.

BSAD 136. Investments: Security Analysis and Portfolio Management. (4)
Lecture, three hours; outside readings and projects, three hours.
Prerequisite(s): BSAD 134/ECON 134. Examines the determination of investment policies and procedures of security analysis with reference to risk and return. Emphasis on the stock market.

BSAD 137. Investments: Speculative Markets. (4)
Lecture, three hours; outside readings and projects, three hours.
Prerequisite(s): BSAD 136. Analysis of advanced topics in finance, including options, commodity futures, financial futures, and mutual fund performance evaluation.

BSAD 138. International Finance. (4)
Lecture, three hours; outside readings and projects, three hours.
Prerequisite(s): BSAD 134/ECON 134 or equivalent; upper-division standing. A survey of international financial institutions and the financial factors that affect the modern multinational corporation. Emphasis on exchange rate and portfolio risk.

BSAD 139. Real Estate Investments. (4)
Lecture, three hours; outside readings and projects, three hours.
Prerequisite(s): BSAD 134/ECON 134. Analysis of real estate development including consideration of site selection, market analysis, financing, design and construction, loan contracts, mortgage risks, and investment analysis.

BSAD 142. Industrial/Organizational Psychology. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): PSYC 002. Introduction to the field of industrial/organizational psychology covering fundamental theory and research in personnel and organizations. Topics include employee selection and training, performance appraisal, motivation, organizational dynamics, leadership, and job satisfaction. Cross-listed with PSYC 142.

BSAD 150. The Sociology of Economic Organizations. (4)
Lecture, three hours; discussion, one hour. Historical and cultural analysis of modern industry, the social structure of labor-management relations, industry's community role. The behavior of intended rational organizations. Cross-listed with SOC 150.
BSAD 151. Formal Organizations. (4)
Lecture, three hours; discussion, one hour. A survey of processes unique to formal organizations as well as social processes that affect their structure and operation. These processes are examined in different types of organizations (schools, industrial firms, prisons, military, etc.). Cross-listed with SOC 151.

BSAD 152. Economics of Labor Relations. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002, ECON 003. An analysis of the history of labor and industrial relations in the U.S. with emphasis on problems of collective action, long swings of economic growth, income inequality, and the role of government. Cross-listed with ECON 152.

BSAD 153. Labor Economics. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 102A. An analysis of labor demand, labor supply, and the structure of wages. Neoclassical, institutional, and radical perspectives emphasized. Cross-listed with ECON 153.

BSAD 154A. Business Law. (4)
Lecture, three hours; extra reading and project, three hours. Prerequisite(s): upper-division standing. BSAD 142/PSYC 142 or ECON 100A recommended. Topics include operations of courts, contracts, torts, agency, partnerships, corporations, and bankruptcy.

BSAD 154B. International Business Law. (4)
Lecture, three hours; extra reading project, three hours. Prerequisite(s): BSAD 154A or equivalent. Topics include international contracting, transportation, payment, legal systems, intellectual property, organization, litigation, and General Agreement on Tariffs and Trade (GATT).

BSAD 155. Personnel Management. (4)
Lecture, three hours; outside readings and projects, three hours. Prerequisite(s): upper-division standing. Lecture explores major personnel processes. Focus is on recruitment, selection, promotion, and development. Discusses methods of compensation and the handling of grievances.

BSAD 156. Leadership Development. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing. Detailed analysis of leadership theory and practice through lectures, self-analysis instruments, and discussions of independent field experiences. A survey of areas pertaining to leadership, such as leadership theory, leadership style, oral and written communication, ethical leadership, interpersonal conflict management, the dynamics of culture, and gender in organization leadership.

BSAD 157. Managing Workforce Diversity. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing. BSAD 142/PSYC 142 or BSAD 155 recommended. Topics include work force stereotypes, workplace representation and segregation, culturally based leadership and communication styles, workplace conflicts, and related legislative initiatives.

BSAD 158. Business in Society. (4)
Lecture, three hours; outside readings and projects, three hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include processes unique to formal organizations as well as social processes that affect their structure and operation. Focus on current tax provisions and tax planning, consideration is also given to the legislative and judicial development of these provisions.

BSAD 159. Auditing. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): BSAD 156A (may be taken concurrently). Topics include auditing environment, the auditor's legal liability, the audit process (internal control, compliance tests, sampling, substantive evidence gathering, EDP auditing), the audit procedures for various types of accounts, and the auditor's report and management letters.

BSAD 160. Industrial Organization. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing. Cross-listed with ECON 102A. An in-depth study of the organization and structure of the American industrial system with emphasis on its production and pricing behavior and policies, and its market structure and the public policies regulating or influencing its market behavior. Cross-listed with ECON 160.

BSAD 161. Business in Society. (4)
Lecture, three hours; outside readings and projects, three hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include processes unique to formal organizations as well as social processes that affect their structure and operation. Focus on current tax provisions and tax planning, consideration is also given to the legislative and judicial development of these provisions.

BSAD 163. Cost and Management Accounting. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing. Study of accounting data used for managerial planning and controlling of business operations. Provides an introduction to manufacturing operations and cost accounting systems, cost-volume-profit analysis, relevant costing, standard costing and variance analysis, as well as budgeting.

BSAD 164. Multinational Accounting. (4)
Lecture, three hours; outside project, three hours. Prerequisite(s): BSAD 163, BSAD 156A. Cross-listed with ECON 160. Topics include multinational accounting, management of profit organizations.

Lecture, three hours; individual study, three hours. Prerequisite(s): BSAD 020B or equivalent. In-depth study of financial accounting theory and practice. Discusses the preparation of financial statements and their analysis and application in decision making.

BSAD 165B. Intermediate Financial Accounting II. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): BSAD 165A or equivalent. Continuation of study of financial accounting theory and practice. Topics include current liabilities and contingencies, long-term liabilities, income taxes, and temporary and permanent taxes.

BSAD 165C. Intermediate Financial Accounting III. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): BSAD 165B or equivalent. Continuation of study of financial accounting theory and practice. Discusses the preparation of financial statements and their analysis and application in decision making.

BSAD 166. Accounting Information Systems. (4)
Lecture, three hours; outside readings and projects, three hours. Prerequisite(s): BSAD 163 and BSAD 170 or their equivalent. Study of the concepts and techniques in the design and implementation of accounting information systems within companies operating environments. The emphasis will be on the effects of the computer on these systems.

Lecture, three hours; individual study, three hours. Prerequisite(s): BSAD 165C (may be taken concurrently). Topics include advanced accounting topics such as consolidated financial statements, accounting for multinational corporations, partnership accounting, and accounting for non-profit organizations.

BSAD 168A. Individual Taxation. (4)
Lecture, three hours; outside readings and projects, three hours. Prerequisite(s): BSAD 163 or equivalent. Topics include individual taxation, income taxation of estates and trusts, international taxation, and tax administration.

BSAD 168B. Federal Taxation for Corporations, Partnerships, Estates, and Trusts. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): BSAD 168A. Topics include corporate taxation, partnership taxation, the wealth transfer tax, income taxation of estates and trusts, international taxation, and tax administration.

BSAD 170. Introduction to Management Information Systems. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CS 008, MATH 023, or equivalents. An in-depth study of management information systems. Topics include computer hardware and software, business data processing, data bases, telecommunications, computer systems analysis and design, cost-benefit analysis, and systems applications in business.

BSAD 171. Systems Analysis and Design. (4)
Lecture, three hours; outside readings and projects, three hours. Prerequisite(s): BSAD 170 or equivalent. Topics include systems analysis and design, programming assignment (Pascal or BASIC), and use of spreadsheet software.

BSAD 173. Introduction to Data Bases for Management. (4)
Lecture, three hours; outside readings and projects, three hours. Prerequisite(s): BSAD 170 or equivalent. Topics include databases, physical and conceptual aspects of data base management systems, including familiarity with the variety of data base systems based on different data models. Examines the role of database systems in management information systems (MIS) and issues in data base design for effective support of MIS. Requires the use of a data base package.

BSAD 174. Electronic Commerce. (4)
Lecture, three hours; extra reading and project, three hours. Prerequisite(s): BSAD 170. Topics include physical and conceptual aspects of data base management systems, including familiarity with the variety of data base systems based on different data models. Examines the role of database systems in management information systems (MIS) and issues in data base design for effective support of MIS. Requires the use of a data base package.
how EC can be used to interact with customers, other organizations, and those within the organization. Studies technical innovations, provides a critical evaluation of strategies, and examines current applications and their impact on the business environment.

**BSAD 175. Business Data Communications. (4)**

Lecture, three hours; extra reading, three hours. Prerequisite(s): BSAD 170. Surveys components of telecommunication systems; examines major design and analysis issues in the development and implementation of computer communication systems. Studies both voice and data communication systems including local area networks, wireless systems, satellite systems, and distributed computer and data base systems. Emphasizes evaluation of these systems for business purposes.

**BSAD 176. The Sociology of Work in Organizations. (4)**

Lecture, three hours; outside research, three hours. Prerequisite(s): SOC 001 or consent of instructor. Emphasizes the roles of individuals in organizations. Topics include the design and redesign of jobs, the effects of job characteristics on the worker, trends in job content, and the aggregation of individual jobs into occupations and labor market segments. Cross-listed with SOC 176.

**BSAD 178. International Trade. (4)**

Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 003 or ECON 003H. A study of the pure theory of trade, trade policy, and international factor movements including illustrative application to current issues and problems. Cross-listed with ECON 178.

**BSAD 182. Politics and Economic Policy. (4)**

Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing in Business Administration; consent of instructor. Emphasizes the roles of individuals in organizations. Topics include the design and redesign of jobs, the effects of job characteristics on the worker, trends in job content, and the aggregation of individual jobs into occupations and labor market segments. Cross-listed with ECON 178.

**BSAD 184. Management Strategy and Policy. (4)**

Lecture, three hours; discussion, one hour. Prerequisite(s): senior standing in Business Administration. An integrative course which provides an understanding of strategic decision-making processes in organizations, the interrelationships among functional areas, and how decision making is affected by internal and external environments. Teamwork and case studies are emphasized.

**BSAD 185. International Strategy and Management. (4)**

Lecture, three hours; outside project, three hours. Prerequisite(s): senior standing; BSAD 184 is recommended. Examines the management and strategic challenges of firms competing in international and global markets. Topics include recent trends in globalization of markets and industries, strategic alliances, foreign direct investment, emerging economies, political risk and cross-cultural interaction and leadership.

**BSAD 186. Regulation: A Political Perspective. (4)**

Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Examines government regulation from a political perspective, covering both traditional areas of business regulation and the newer social regulation in areas of environment, health and safety, and personal behavior. Rationales for and against regulation are evaluated, in theory and through case studies. Cross-listed with POSC 186.

**BSAD 190. Special Studies. (1-5)**

Individual study; three to fifteen hours. Prerequisite(s): upper-division standing, consent of instructor and Program Chair. A project to be undertaken under faculty supervision. Course is repeatable to a maximum of 12 units.

**BSAD 1984. Individual Internship in Business Administration. (1-12)**

Seminar, one hour; internship, three to thirty-six hours; term paper, one to eleven hours. Prerequisite(s): upper-division standing in Business Administration; consent of instructor. Active participation in the work of a business concern or a public or quasi-public agency combining academic instruction and supervised field experience. Course is repeatable to a maximum of 16 units. A maximum of 4 quarter units may be counted toward the degree requirements for Business Administration.

**BSAD 1994. Senior Honors Research. (1-5)**

Seminar, one hour; extra reading, two to twelve hours; term paper, two to twelve hours. Prerequisite(s): senior standing with major in Business Administration, admission to the University Honors Program or consent of instructor. Research in business administration under faculty supervision. The student will submit a written report. Total credit may not exceed 12 quarter units.

**UNDERGRADUATE CURRICULUM**

Students interested in neuroscience can obtain training in behavioral neuroscience, neurobiology, and neurochemistry through the Neuroscience major leading to the B.A. or B.S. degree. The Neuroscience major is an intercollege major offered by the College of Humanities, Arts, and Social Sciences and the College of Natural and Agricultural Sciences. See Neuroscience Undergraduate Major section.

**GRADUATE CURRICULUM**

Courses and research in neuroscience are offered by the interdepartmental graduate program in Neuroscience. See Neuroscience Graduate Study section.
The program offers an M.S. degree, Plan I (thesis), and a Ph.D. degree. Students enrolled in either degree program are expected to complete the following core of course work in cell, molecular, and developmental biology:

1. One graduate-level course in cell biology (BIOL 200A, BPSC 237, or NRSC 200A/PSYC 200A)
2. One graduate-level course in molecular biology (BIOL 200B, BCH 211, BPSC 231/BCH 231, BMSC 202, or NRSC 200B/PSYC 200B)
3. One graduate-level course in developmental biology (BIOL 222, BPSC 232/BIOL 232, or ENTM 226)

Each student enrolls in the interdepartmental colloquium series in Cell, Molecular, and Developmental Biology (BCH 257/BIOL 257/BMSC 257/BPSC 257/ENTM 257/NEM 257/NRSC 257/PLPA 257). Upon entry into the program, each student meets with a guidance committee, which recommends a course of study commensurate with the student's interests and background.

**Master’s Degree**

Master's students will complete core course work in cell, molecular, and developmental biology; enroll in at least one graduate seminar course in a specialized area in one of these fields; enroll in the interdepartmental colloquium series in Cell, Molecular, and Developmental Biology; and undertake a research project leading to a thesis. Each student must complete 36 units of course work, of which at least 24 units must be in the graduate series (200 level) in the biological sciences. No more than 12 units in the 290 series can be taken to fulfill the 24-unit requirement.

**Candidates for the M.S. degree must defend their thesis at a public oral presentation.**

**Doctoral Degree**

Students will enroll in one graduate course in cell, molecular, and developmental biology; in addition to the three core courses indicated in the description for the graduate program. Students will enroll in graduate seminar courses in at least two areas among cell, molecular, or developmental biology and in the interdepartmental colloquium series in Cell, Molecular, and Developmental Biology. Each candidate will undertake a research project leading to a dissertation, and will fulfill a two-quarter teaching requirement. Thirty-six units of 100- or 200-series courses must be taken, of which at least 24 units must be in the graduate series (200 level) in the biological sciences. A minimum of 16 units of course work not in the 290 series must be completed to fulfill the requirements for 24 units of graduate course work.

Doctoral students are advanced to candidacy following successful completion of written and oral qualifying examinations. Students write a proposal detailing the rationale, specific aims, and approaches to be undertaken for their proposed dissertation research prior to taking the oral qualifying examination. Ph.D. candidates must successfully defend their dissertation research in a public oral presentation.

**Career Opportunities**

There is a high demand in industry and academia for scientists with training in cell, molecular, and developmental biology. Students matriculating from the program are well trained in this field and successfully obtain positions in biotechnology, including biomedical and agricultural industries, and at colleges and universities nationwide.

The normative time to complete the master’s degree is two years and the doctoral degree five years.
Mark R. Matsumoto, Ph.D.
Ashok K. Mulchandani, Ph.D.
Joseph M. Norbeck, Ph.D. The Jacques
and Eugenie Yaeger Families Chair
Akula Venkatram, Ph.D.

Associate Professor
Wilfred Chen, Ph.D.

Assistant Professors
Marc Deslusses, Ph.D.
Anders O. Wiström, Ph.D.
Yushan Yan, Ph.D.
Jianzhong Wu, Ph.D.

Cooperating Faculty
Christopher Ahrnein, Ph.D. (Environmental Sciences)
Michael A. Anderson, Ph.D. (Environmental Sciences)
Janet T. Aryy, Ph.D. (Environmental Sciences)
Andrew Chia-Shing Chang, Ph.D. (Environmental Sciences)
David M. Crohn, Ph.D. (Environmental Sciences)
David E. Crowley, Ph.D. (Environmental Sciences)
William T. Frankenberger, Jr., Ph.D. (Environmental Sciences)
William A. Jury, Ph.D. (Environmental Sciences)
Maryllyn V. Yates, Ph.D. (Environmental Sciences)
Paul J. Ziemann, Ph.D. (Environmental Sciences)

Assistant Professors
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Paul J. Ziemann, Ph.D.

The Jacques
and Eugene Yeager Families Chair

MAJORS

Chemical Engineering is the engineering discipline that focuses on transforming raw materials into useful everyday products. Chemical engineers turn the discoveries of chemists and physicists into commercial realities. They find work in a variety of fields including pharmaceuticals, materials, chemical, fuels, pollution control, nuclear, and electronic industries. At UCR, the Chemical Engineering major provides a choice of either a Chemistry or Biochemistry option. The Chemistry option emphasizes the traditional chemical engineering issues, while the Biochemistry option focuses on the biochemical processes, i.e., processes based on microorganisms or enzymes. The major curriculum, including both options, is accredited by the Accreditation Board for Engineering and Technology.

Environmental Engineering deals with the design and construction of processes and equipment intended to lessen the impact of man’s activities on the environment. With the growing importance of environmental quality, the environmental engineer plays a pivotal role in modern industrial activity. Environmental engineers are involved in a wide range of activities including the design of alternative fueled vehicles; development of renewable energy sources; design of equipment for solid waste collection and disposal; municipal and industrial water and wastewater treatment; air pollution control systems; and hazardous waste management. The major curriculum, including both options, is accredited by the Accreditation Board for Engineering and Technology.

During their freshman year, all engineering students follow a common curriculum of mathematics and sciences. By the beginning of the sophomore year, students begin more specific coursework toward their selected major. Students enrolled in community college pre-engineering programs are expected to complete the equivalent of the first two years of UCR’s course work for engineering majors and to demonstrate strength in calculus, chemistry and physics. The Intersegmental General Education Transfer Curriculum (IGETC) does not meet transfer requirements for Engineering. The Marlan and Rosemary Bourns College of Engineering provides special advisory services to aid community college transfer students in formulating their program and in remedying any deficiencies in required course work.

Degree Requirements

University Requirements
See the Undergraduate Studies Section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, the Marlan and Rosemary Bourns College of Engineering, in the Undergraduate Studies section, for requirements that students must satisfy.

Courses used to fulfill the College requirements must be selected from an approved list available in The College Office of Student Affairs. To provide depth in satisfying breadth in the Humanities and Social Sciences, courses must meet the following criteria:
1. At least two of the Humanities and/or Social Science courses must be upper-division.
2. At least two courses must be from the same area (for example, two courses in History), with at least one of the two being an upper-division course.

The Chemical Engineering major and the Environmental Engineering major use the following major requirements to satisfy The College’s Natural Sciences and Mathematics breadth requirement.

1. BIOL 005A
2. CHEM 001A-CHEM 001B-CHEM 001C
3. MATH 009A

Major Requirements

Chemical Engineering

The major requirements for the B.S. degree in Chemical Engineering are as follows. Students must choose either a Biochemistry or a Chemistry option.

1. Lower-division requirements (67 units)
   a) BIOL 005A
   b) CHEM 001A-CHEM 001B-CHEM 001C
   c) CS 010
   d) EE 001A, EE 001LA
   e) MATH 009A-MATH 009B-MATH 009C
   f) MATH 010A-MATH 010B, MATH 046
   g) PHYS 040A, PHYS 040B, PHYS 040C

2. Upper-division requirements (72 units)
   a) CHEM 110B, CHEM 112A-CHEM 112B-CHEM 112C
   b) CHE 110, CHE 117, CHE 118, CHE 120, CHE 122, CHE 160B, CHE 160C, CHE 175A, CHE 175B
   c) CHE 130/ENVE 130, CHE 160A/ENVE 160A
   d) ENGR 100, ENGR 115, ENGR 116, ENGR 118

3. Option requirements: choose one option
   a) Biochemistry option (21 units)
      (1) BCH 110A-BCH 110B
      (2) BIOL 121A/BIOL 121B
   b) Biochemistry option (22 units)
      (1) CHEM 005, CHEM 125
      (2) Twelve (12) units of technical electives chosen from CHE 102, CHE 136, CHE 171; ENVE 120, ENVE 133, ENVE 134, ENVE 138
### Sample Program

#### Freshman Year

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#### Senior Year

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### Biochemistry Option

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### Chemistry Option

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### Environmental Engineering

The major requirements for the B.S. degree in Environmental Engineering are as follows. Students must choose either an Air Pollution Control Technology or a Water Pollution Control Technology option.

1. **Lower-division requirements (67 units)**
   - a) BIOL 005A
   - b) CHEM 001A-CHEM 001B-CHEM 001C
   - c) CS 010
   - d) EE 001A, EE 001LA
   - e) MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B, MATH 046
   - f) ME 010
   - g) PHYS 040A, PHYS 040B, PHYS 040C

2. **Upper-division requirements (95 units)**
   - a) CHEM 112A-CHEM 112B-CHEM 112C
   - b) CHEM 120
   - c) ENGR 100, ENGR 115, ENGR 116, ENGR 118
   - d) ENVE 120, ENVE 135, ENVE 140, ENVE 142, ENVE 144/ENSC 144, ENVE 146, ENVE 160B, ENVE 160C, ENVE 171, ENVE 175A-ENVE 175B
   - e) ENVE 130/CHE 130, ENVE 160A/CHE 160A
   - f) ME 110
   - g) Humanities/Social Sciences

### Sample Program

#### Freshman Year

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### GRADUATE PROGRAM

The Graduate Program in Chemical and Environmental Engineering offers training leading to the degrees of Master of Science and Doctor of Philosophy. Fields of specialization include biochemical engineering, environmental biotechnology, air quality systems engineering, and water quality systems engineering. All applicants are required to submit scores from the general aptitude Graduate Record Examination (GRE).

Applicants to the graduate program should have a degree in engineering, have a satis-
Master's Degree

The M.S. degree in Chemical and Environmental Engineering can be earned by either one of two plans: by completion of a thesis (Plan I) which reports an original investigation of a defined problem, or by passing a comprehensive examination (Plan II). Plan I requires completion of a minimum of 36 units of approved course work and submission of an acceptable M.S. thesis. At least 24 of these units must be in graduate courses (200 series courses). Plan II requires completion of a minimum of 36 units of approved course work and successful passage of a comprehensive examination. At least 18 of these units must be in graduate courses (200 series courses) and none of these credits may be in courses numbered 297 or 299. Typically, the examination will be a six-hour written, closed-book examination emphasizing fundamental knowledge and breadth of the study area rather than specific coverage in individual courses. An oral follow-up session may be requested by the examination committee following its evaluation of the written exam.

For the M.S. degree, students must complete a minimum of three quarters in residence in the University of California with a GPA of 3.00 or better. Normative time for a student to complete the M.S. degree under both Plan I and Plan II is six quarters.

Doctoral Degree

The Ph.D. degree provides an opportunity for students to pursue a program of in-depth research in a specialized area. The procedure for satisfying the requirements for the Ph.D. degree in Chemical and Environmental Engineering at UCR consists of four parts: 1) successful completion of an approved program of course work, 2) passing a Ph.D. preliminary examination, 3) approval of a Ph.D. dissertation proposal, and 4) defense and approval of the Ph.D. dissertation.

The program of course work is formulated by each student and a faculty advisor in the first or second quarter after admission to the Ph.D. program and must be approved by the student's Ph.D. advisor and Ph.D. Examination Committee. There is no strict course or unit requirement for the Ph.D. degree. It is expected, however, that a Ph.D. student will pursue a program of study that includes 1) a major area of study intended to increase the student's depth of knowledge in an engineering research specialty, and 2) a minor area of study intended to support and increase the student's breadth of knowledge in the major area.

The purpose of the Ph.D. preliminary examination is to test students' understanding of basic scientific and engineering principles, and its application to their research interests. Each student desiring the Ph.D. degree is required to take a preliminary examination. Students are expected to have completed the examination near the end of their first year in the Ph.D. program. The Ph.D. preliminary examination consists of an eight-hour written comprehensive examination with a selection of problems designed to test understanding of basic concepts and principles.

After successful completion of the Ph.D. preliminary examination, each student, with advice from an advisor, prepares a dissertation proposal. Typically, Ph.D. students will submit a dissertation proposal to their Ph.D. Qualifying Committee within one year after successfully completing the preliminary examination. The Ph.D. Qualifying Committee chairperson will normally schedule an oral defense within one month of the written proposal submission. The presentation is given only to the Ph.D. dissertation committee members.

The oral presentation/defense of the proposal focuses on the dissertation problem. Students should demonstrate considerable depth of knowledge in the student's area of specialization and a clear understanding of the research methods that are needed for successful completion of the dissertation research. The oral presentation/defense will begin with a presentation by students on their dissertation topic and will be followed by questions and suggestions from the Ph.D. Qualifying Committee. Based on the written proposal and oral defense, a decision will be made by the Ph.D. Qualifying Committee that each student either 1) be advanced to Ph.D. candidacy 2) be asked to modify and enhance the proposal, or 3) be requested to withdraw from the Program. Following advancement to Ph.D. candidacy, students formally begin their dissertation research. The progress of the dissertation is monitored by the student's Ph.D. Dissertation Committee. It is recommended that Ph.D. candidates interact frequently with members of their dissertation committee to insure that dissertation progress is acceptable.

The Ph.D. Dissertation Committee consists of a minimum of three UCR Academic Senate members. All committee members should be in a position to offer guidance and be able to judge the scholarship of the dissertation work. Upon recommendation of the Graduate Advisor, Doctoral Dissertation Committees are appointed by the Dean of the Graduate Division.

After completion of the dissertation research, a written copy of the dissertation must be submitted to and approved for defense by the student's Ph.D. Dissertation Committee. Once a draft has been approved for defense, an oral defense of the dissertation will be scheduled. This defense consists of a seminar open to the entire academic community, followed by a question/answer period conducted by the Ph.D. Dissertation Committee. For the Ph.D. degree, students must complete at least six quarters in residence in the University of California with a GPA of 3.00 or better. Normative time for a student to complete the Ph.D. degree is three years for students holding an M.S. degree in Chemical and Environmental Engineering from UCR and five years for those entering the program without an M.S. degree in Chemical and Environmental Engineering.

CHEMICAL ENGINEERING

UPPER-DIVISION COURSES

CHE 102. Catalytic Reaction Engineering. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CHE 122 or consent of instructor. Principles of surface reactions and heterogeneous catalysis. Catalyzed reaction kinetics, heterogeneous reactions, diffusion and heterogeneous catalysis, analysis and design of heterogeneous reactors.

CHE 110. Chemical Process Analysis. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 001C, MATH 009C, PHYS 040B; or consent of instructor. Application of principles of conservation of mass and energy to chemical process systems. Introduction to chemical engineering process analysis and calculations for steady and nonsteady systems.

CHE 114. Applied Fluid Mechanics. (4)
Lecture, three hours; one-hour discussion and three-hour laboratory alternate weekly. Prerequisite(s): CHEM 110A Fluid statics, fluid flow, flow of compressible and incompressible fluids in conduits, flow past immersed bodies, transportation and metering of fluids, agitation and mixing of liquids.
CHE 117. Separation Processes. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): CHE 130 or ENVE 130 (may be taken concurrently). CHE 120, ENGR 116; or consent of instructor. Fundamental concepts and practical techniques for designing equipment based on equilibrium stage processes such as gas-liquid absorption, distillation, liquid-liquid extraction, solid-liquid extraction, humidification, drying, and membrane processes.

CHE 118. Process Dynamics and Control. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): CHE 117, CHE 122, ENGR 118; or consent of instructor. Fundamentals of process control. Feedback and feedforward control of dynamic processes. Frequency response analysis. Introduction to multivariable control.

CHE 120. Mass Transfer. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): ENGR 115, ENGR 118; CHE 110 or ENVE 171; or consent of instructor. Introduction to analysis of mass transfer in systems of interest to chemical and environmental engineering practice. Transport of matter by diffusion, free and forced convection.

CHE 122. Chemical Engineering Kinetics. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): CHE 120. Introduction to homogeneous and heterogeneous kinetics and reactor design for chemical and biochemical processes.


CHE 124L. Biochemical Engineering Laboratory. (2) Laboratory, six hours. Prerequisite(s): CHE 124 or consent of instructor. Laboratory practices in biochemical engineering. Determination of microbial kinetics and biologically mediated reactions, oxygen transfer coefficients. Batch and continuous culture, air and media sterilization, biosignals.

CHE 130. Advanced Engineering Thermodynamics. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010B (may be taken concurrently), ENGR 100; or consent of instructor. Advanced study of chemical thermodynamics and their applications to chemical and environmental engineering processes. Principles for the thermodynamic behavior of pure solutions and mixtures, phases, and chemical equilibria for homogeneous and heterogeneous systems are applied to a variety of processes common to chemical and environmental engineering. Cross-listed with ENVE 130.

CHE 136. Advanced Topics in Heat Transfer. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): CHE 120, ENGR 116. Advanced study of the computational and theoretical methods associated with heat transfer, fluid flow, and other related processes. Topics include phenomena of heat conduction, convection, and the calculation of flow fields.

CHE 140. Cell Engineering. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): CHE 124 or consent of instructor. Introduction to genetic and environmental manipulation of cells for production of proteins and for enhanced biocatalytic and synthetic activities. Cloning and gene expression in different host systems, posttranslational processing, metabolic controls and kinetics, in vivo NMR spectroscopy, cell modeling, and sensitivity analysis.

CHE 150. Biosensors. (4) Lecture, two hours; laboratory, six hours. Prerequisite(s): BCH 184 or CHE 124 or consent of instructor. Introduces the fundamentals and applications of biosensors. Topics on enzyme-, whole-cell-, tissue-, and antibody/antigen-based electrochemical, optical, and piezoelectric biosensors for applications in biosensor monitoring and control, environmental monitoring, and health care are covered.

CHE 160. Chemical and Environmental Engineering Laboratory. (2) Laboratory, six hours. Prerequisite(s): CHE 120, ENGR 115; or consent of instructor. Laboratory exercises in chemical and environmental engineering. Experiments in physical measurements, fluid mechanics, and mass transfer. Experimental design, analysis of results, and preparation of engineering reports are emphasized. Cross-listed with ENVE 160A.

CHE 160B. Chemical Engineering Laboratory. (2) Laboratory, six hours. Prerequisite(s): CHE 122, ENGR 116; or consent of instructor. Laboratory exercises in chemical engineering. Experiments in physical measurements, heat transfer, reactor analysis, and chemical kinetics. Experimental design, analysis of results, and preparation of engineering reports are emphasized.

CHE 160C. Chemical Engineering Laboratory. (2) Laboratory, six hours. Prerequisite(s): CHE 117, CHE 122; or consent of instructor. Laboratory exercises in chemical engineering. Experiments in physical measurements, separation processes, and computer simulation. Experimental design, analysis of results, and preparation of engineering reports are emphasized.

CHE 171. Pollution Control for Chemical Engineers. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): CHE 117 or consent of instructor. Principles of industrial pollution control in chemical engineering plants. Regulations, criteria, measurements, and pollution control systems associated with air, wastewater, and solid waste management.

CHE 175A. Chemical Process Design I. (4) Lecture, two hours; laboratory, six hours. Prerequisite(s): senior standing in Chemical Engineering. Introduction to chemical process plant design procedures through economic analysis and actual design of a chemical process. Topics address practical applications to current chemical and biochemical processes and economic constraints. Concentrates mainly on general design considerations and economic principles. Satisfactory (S) or No Credit (NC) grading is not available.

CHE 175B. Chemical Process Design II. (5) Lecture, one hour; laboratory, nine hours; consultation, one hour. Prerequisite(s): CHE 175A. Senior standing in Chemical Engineering. Detailed analysis and process design are completed on the projects begun in CHE 175A. A final report and an oral presentation are required. Satisfactory (S) or No Credit (NC) grading is not available.

CHE 190. Special Studies. (1-5) Individual study; three to fifteen hours. Prerequisite(s): CHE 124; or Program Chair. Individual study to meet special curricular needs.
understanding of engineering processes, engine design, and emission control.

**ENVE 140. Aquatic Chemistry** (4)
Lecture, three hours; one-hour discussion and three-hour laboratory alternate weekly. Prerequisite(s): CHEM 110A or ENGR 100; ENVE 142; or consent of instructor. An introduction to the chemical principles and equilibrium models which are used to describe the behavior of natural water systems, water and wastewater treatment processes, and pollutant transformations which occur in the aqueous environment. Topics and laboratory exercises include acid-base chemistry, precipitation, and redox reactions.

**ENVE 142. Water Quality Engineering** (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): ENGR 115, ENVE 171; or consent of instructor. An introduction to the engineering aspects of water quality management. Water quality characterization and modeling techniques for natural and engineered systems. Application of chemical equilibrium and kinetic models to water quality is discussed.

**ENVE 144. Solid Waste Management** (4)
Lecture three hours; discussion, one hour. Prerequisite(s): BIOL 002 or BIOL 005A, CHEM 001C (or CHEM 011C); either both ENVE 001 (or ENVE 011B) and ENVE 002 (or ENVE 011C); or MATH 008B (or MATH 098B); or MATH 022; or consent of instructor. A study of the characterization, collection, transportation, processing, disposal, recycling, and composting of municipal solid waste. Emphasizes accepted management strategies and design procedures for recovering or disposing of solid waste while protecting public and environmental well-being. Cross-listed with ENSC 144.

**ENVE 145. Hazardous Waste Management** (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ENVE 120 and ENVE 142. Advanced course in the study of physico-chemical, thermal, and biological treatment of hazardous waste. Emphasis is placed on the technical understanding and design of physical, biological, and thermal treatment methods; transportation of hazardous waste; and hazardous waste characterization and site assessment.

**ENVE 146. Water Quality Systems Design** (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ENVE 142 (may be taken concurrently), ENGR 115; or consent of instructor. An introduction to methods of analysis and hydraulic design of water quality systems. Application of the basic theories of fluid flow to the design of water distribution networks, wastewater and storm water collection systems, structures for flow measurement and control, and pumps and pump stations. Emphasis is given to design projects aimed at developing design process skills, including problem specification, modeling, and analysis.

**ENVE 160A. Chemical and Environmental Engineering Laboratory** (2)
Laboratory, six hours. Prerequisite(s): CHE 120, ENGR 115; or consent of instructor. Laboratory exercises in chemical and environmental engineering. Experiments in physical measurements, fluid mechanics, and mass transfer. Experimental design, analysis of results, and preparation of engineering reports are emphasized. Cross-listed with CHE 160A.

**ENVE 160B. Environmental Engineering Laboratory** (2)
Laboratory, six hours. Prerequisite(s): ENGR 116, ENVE 133; or consent of instructor. Laboratory exercises in environmental engineering. Experiments in physical measurements, heat transfer, and air pollution engineering.

Experimental design, analysis of results, and preparation of engineering reports are emphasized.

**ENVE 160C. Environmental Engineering Laboratory** (2)
Laboratory, six hours. Prerequisite(s): ENVE 120, ENVE 142; or consent of instructor. Laboratory exercises in environmental engineering. Experiments in physical measurements, water quality, and unit operations and processes. Experimental design, analysis of results, and preparation of engineering reports are emphasized.

**ENVE 171. Introduction to Environmental Engineering** (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 001C, MATH 090C; PHYS 040B; or consent of instructor. Introduction to mass and energy balances. Overview of contaminants and their effects of human health and the environment. Provides a basic understanding of contaminants, their sources, and their movement and fate in the environment.

**ENVE 175A-ENVE 175B. Senior Design Project** (4-4)
Laboratory, nine hours; consultation, one hour. Prerequisite(s): senior standing in Environmental Engineering. Under the direction of a faculty member, students (individually or in small teams with shared responsibilities) propose, design, build, and test environmental engineering devices or systems. A written report, giving details of the project and test results, and an oral presentation of the design aspects are required. An In Progress (IP) grade is assigned for 175A. Letter grade is given for 175B.

**ENVE 190. Special Studies** (1-5)
Individual study; three to fifteen hours. Prerequisite(s): upper-division standing, consent of instructor and Program Chair. Individual study to meet special curricular needs.

**GRADUATE COURSES**

**CEE 200. Advanced Engineering Computation** (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ENGR 118 or consent of instructor. Problem-solving techniques for basic engineering systems including heat and mass transfer, coupled reactions, fluid flow potential, and control.

**CEE 202. Transport Phenomena** (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CHE 120, ENGR 115, ENGR 116, ENGR 118; or consent of instructor. Topics include transport phenomena, potential flow, and boundary layer theories with applications to submerged heat, momentum, and mass transfer. Introduces numerical techniques used to solve advanced transport phenomena problems.

**CEE 204. Advanced Dynamics and Reaction Engineering** (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CHE 102 or CHE 120 or consent of instructor. Emphasizes kinetics and mechanisms of heterogeneous reactions in different types of reactors. Specific topics include gas-solid noncatalytic reactions; catalytic surfaces and catalyst characterization; and adsorption, diffusion, reaction, and heat transfer in porous catalysts.

**CEE 206. Advanced Chemical Engineering Thermodynamics** (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CHE 130/ENVE 130 or consent of instructor. Application of the laws of thermodynamics to phase and chemical reaction equilibrium. Introduction to statistical thermodynamics, molecular simulations, and the evaluation of thermodynamic properties from molecular simulations.

**CEE 210. Cell Engineering** (4)
Lecture, three hours; laboratory three hours. Prerequisite(s): CHE 124 or consent of instructor. Introduction to genetic and environmental manipulation of cells for production of proteins and for enhanced biocatalytic and synthetic activities. Topics include cloning and gene expression in different host systems, postranslational processing, metabolic controls and kinetics, in vivo nuclear magnetic resonance spectroscopy, cell modeling, and sensitivity analysis.

**CEE 212. Bioseparations and Bioprocess Engineering** (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CHE 124 or consent of instructor. Examines fundamentals of separation processes used to isolate and purify biochemical products such as whole cells, enzymes, food additives, and pharmaceuticals. Covers selected aspects of biochemical engineering such as microbial interactions, economics, and mathematical modeling of bioprocesses.

**CEE 241. Water Quality** (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ENVE 142 or consent of instructor. Topics include assessment of surface water and groundwater quality for public health and safety, and transport of waterborne pollutants, and water quality modeling in natural and engineered systems.

**CEE 242. Pilot Plant Laboratory** (4)
Lecture, one hour; laboratory, nine hours. Prerequisite(s): CHE 124 or consent of instructor. Laboratory investigations of physical, chemical, and biological processes for water treatment, wastewater treatment, and soil remediation.

**CEE 250. Special Topics in the Chemical and Environmental Engineering** (1-2)
Seminar, one to two hours. Prerequisite(s): graduate standing. Seminar in selected topics in chemical and environmental engineering presented by graduate students, staff, faculty, and invited speakers. Letter grades are assigned to students who present a formal seminar; other students receive Satisfactory (S) or No Credit (NC) grades. Course is repeatable.

**CEE 286. Colloquium in Chemical and Environmental Engineering** (1)
Colloquium, one hour. Prerequisite(s): graduate standing. Lectures on a current research topic in chemical engineering, environmental engineering, and other related fields presented by faculty members and visiting scientists. Graded Satisfactory (S) or Credit (CR) grades. Course is repeatable.

**CEE 290. Directed Studies** (1-6)
Individual study, three to eighteen hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Individual study, directed by a faculty member, of selected topics in chemical and environmental engineering. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 9 units.

**CEE 297. Directed Research** (1-6)
Outside research, three to eighteen hours. Prerequisite(s): graduate standing; consent of instructor. Research conducted under the supervision of a faculty member on selected problems in chemical and environmental engi-
Cooperating Faculty
Roger Atkinson, Ph.D.
Paul J. Ziemann, Ph.D.

MAJOR
The Department of Chemistry offers both a B.A. and a B.S. degree in Chemistry as well as a B.S. in Chemistry with a Chemical Physics option or an Environmental Chemistry option.

Bachelor of Arts Degree. The B.A. program is designed for students who wish to obtain a broad educational background with less intensive emphasis on chemistry. In this program, students have increased ease in meeting requirements for such areas as pre-medical, predental, or pharmaceutical science, education, and administration.

Bachelor of Science Degree. The B.S. program is certified by the American Chemical Society and is designed for students interested in a professionally oriented major leading most often to a career or advanced study in chemistry. A chemical physics option is available for students who wish to prepare for admission to a graduate program in chemical physics.

The environmental chemistry option is available for students who wish to become familiar with environmental processes and problems related to air, water, and soil, and to apply their chemical knowledge working in environmental related areas. This option will also prepare students for admission to a graduate program emphasizing environmental chemistry.

Pre-Health Science. Chemistry majors in either the B.A. or B.S. programs can prepare for admission to medical, pharmacy, or dental schools by carefully planning their programs of study. Students planning to apply for postgraduate studies in the health sciences should make it a special point to consult with the Chemistry Undergraduate Advisor early in their studies at UCR.

Teaching Credential
Teachers in the public schools in California must have a credential approved by the State Commission on Teacher Credentialing. The credential requires an undergraduate major, baccalaureate degree, and completion of a graduate credential program such as that offered by the Graduate School of Education at UCR. The latter usually requires three quarters and includes education courses and supervised teaching.

Before admission and student teaching in a graduate credential program, the candidate must pass the California Basic Education Skills Test (CBEST) and demonstrate subject-matter proficiency in the fields which the candidate will teach. The candidate can demonstrate proficiency either by passing the Commission's subject-matter assessment examination, or preferably, by completion of an undergraduate program that is state-approved for teacher preparation.

UCR has an approved undergraduate program for chemistry majors who plan to get a Multiple Subjects Credential and teach in the elementary (K-6) grades. A breadth of course work is necessary, in addition to the specified requirements for the major. Students are urged to start early, preferably as freshmen, selecting courses most helpful for this career.

UCR does not yet have a state-approved undergraduate program for chemistry majors who wish to teach at the secondary level. The Teaching Credential in Science, chemistry emphasis, is required for chemistry teachers, grades 7-12. Students who plan to get this credential must take the Commission's subject-matter assessment examination and should make certain their academic program includes preparatory course work. The examination includes chemistry in depth and general science with introductory, college-level biology, chemistry, physics, and geoscience (geology, meteorology, oceanography, astronomy).

Further information about courses, requirements, and examinations can be obtained in orientation meetings, the Student Affairs Office (1221 Pierce Hall), and the Graduate School of Education (1215 Sproul Hall).

Career Opportunities
Most present-day chemists work in industrial firms, government, and education. Although many chemists eventually leave the research laboratory for positions in management, marketing, or production, the most common professional assignments are in research and development. Chemists are involved in the development, production, testing, control, and sales of products such as medicines, glasses, metals, agrochemicals, paints, rubber, plastics, soaps and detergents, and plant nutrients. An increasing number of chemists are involved in the fields of molecular biology, air and water quality, and the development of new sources of energy and new high-technology materials.

The Federal Government and nonprofit foundations also employ chemists. Such agencies as the National Institutes of Health, Department of Energy, the Environmental Protection Agency, National Aeronautics and Space Administration, National Institutes of Science and Technology, and Food and Drug Administration require scientific and technological advice and administration as well as chemical research.

The bachelor's degree programs in the UCR Department of Chemistry are well suited for preparation for general, technical, profession-
al, and health-science careers. After graduation, UCR students may be professionally employed; go on to graduate work; or enter business, medical, or other professional schools.

Transfer Students

Students transferring to the Chemistry major are required to complete courses comparable to the following one-year sequences before they transfer:

1. General chemistry, equivalent to CHEM 001A-CHEM 001B-CHEM 001C, each course completed with a grade of "C" or better
2. First-year calculus, equivalent to MATH 009A-MATH 009B-MATH 009C, each course completed with a grade of "C" or better

At least one of the following one-year sequences:

1. Second-year calculus, equivalent to MATH 010A-MATH 010B, MATH 046, each course completed with a grade of "C" or better
2. General physics (calculus-based) equivalent to PHYS 004A, PHYS 004B, PHYS 004C, each course completed with a grade of "C" or better
3. Organic chemistry (one-year lower-division), each course completed with a grade of "B" or better

Students must have a minimum grade point average of 2.70 in transferable college courses.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Natural and Agricultural Sciences in the Undergraduate Studies Section, for requirements that students must satisfy.

Some of the following requirements for the major may also fulfill some of the College's breadth requirements. Consult with a department advisor for course planning.

Major Requirements

The major requirements for the B.A. and the B.S. degree in Chemistry are as follows:

Bachelor of Arts

1. Lower-division requirements (48-49 units)
   a) MATH 009A-MATH 009B-MATH 009C, MATH 010A
   b) PHYS 040A, PHYS 040B, PHYS 040C (or PHYS 002A, PHYS 002B, PHYS 002C, PHYS 002LC)
   c) CHEM 001A-CHEM 001B-CHEM 001C (or CHEM 01HA-CHEM 01HB-CHEM 01HC), CHEM 005

2. Upper-division requirements (38 units)
   A minimum grade of "C-" for any upper-division course used to fulfill the requirements for the B.A. degree.
   a) CHEM 110A, CHEM 110B, CHEM 112A-CHEM 112B-CHEM 112C, CHEM 113, CHEM 125, CHEM 150A, CHEM 191, and either CHEM 111 or CHEM 166
   b) Ten (10) additional upper-division units in Chemistry if the year of organic chemistry is taken at a community college

Bachelor of Science

1. Lower-division requirements (61–62 units)
   a) CHEM 001A-CHEM 001B-CHEM 001C (or CHEM 01HA-CHEM 01HB-CHEM 01HC), CHEM 005
   b) MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B, MATH 046
   c) PHYS 004A, PHYS 004B, PHYS 004C, PHYS 004D

2. Upper-division requirements (50 units)
   A minimum grade of "C-" for any upper-division course used to fulfill the requirements for the B.S. degree.
   a) CHEM 110A, CHEM 110B, CHEM 112A-CHEM 112B-CHEM 112C, CHEM 113, CHEM 125, CHEM 150A, CHEM 191
   b) Two laboratory courses from the group CHEM 140, CHEM 166, BCH 102
   c) Nine (9) additional units in physical chemistry

Environmental Chemistry Option

Students must consult with the Undergraduate Advisor before electing this option.

1. Lower-division requirements (73–74 units)
   a) CHEM 001A-CHEM 001B-CHEM 001C (or CHEM 01HA-CHEM 01HB-CHEM 01HC), CHEM 005
   b) MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B, MATH 046
   c) PHYS 004A, PHYS 004B, PHYS 004C, PHYS 004D
   d) BIOL 005A-BIOL 005B-BIOL 005C

2. Upper-division requirements (64–68 units)
   A minimum grade of "C-" for any upper-division course used to fulfill the requirements for the Environmental Chemistry option.
   b) One course from ENSC 104/SWSC 104 or GEO 137
   c) Two additional courses from the group CHEM 150B, CHEM 151, CHEM 191, CHEM 197, CHEM 199, ENSC 104/SWSC 104, ENSC 140/SWSC 140, ENSC 155, ENSC 163, ENTX 101, GEO 137, GEO 160 (4 units total from CHEM 197 and/or CHEM 199)

Undergraduate research is strongly encouraged for students with the requisite ability. Students wishing to participate in this activity should contact individual faculty members concerning areas of interest.
Sample Program

Student programs are planned on an individual basis with their advisors, and there is considerable flexibility in the sequence in which courses required for the major are taken. For example, PHYS 040A, PHYS 040B, PHYS 040C can be started equally well during either the freshman or sophomore year. The sample program is typical for a well-prepared entering freshman who seeks the B.S. degree.

**Freshman Year**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>CHEM 001A-CHEM 001B-CHEM 001C (or CHEM 01HA-CHEM 01HB-CHEM 01HC)</td>
<td>4 4 4 (or 5)</td>
<td>4 4 4</td>
</tr>
<tr>
<td>PHYS 040A-PHYS 040B</td>
<td>5 5</td>
<td>5 5</td>
</tr>
<tr>
<td>MATH 009A-MATH 009B-MATH 009C</td>
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<td>4 4 4</td>
</tr>
<tr>
<td>ENGL 001A-ENGL 001B-ENGL 001C</td>
<td>4 4 4</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Electives (optional)</td>
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<td>4 4 4</td>
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<tr>
<td><strong>Total Units</strong></td>
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<td>17 17 (or 18)</td>
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**Sophomore Year**

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<tr>
<th>Fall</th>
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<tbody>
<tr>
<td>CHEM 112A-CHEM 112B-CHEM 112C</td>
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<td>4 4 4</td>
</tr>
<tr>
<td>PHYS 040C-PHYS 040D</td>
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<td>5 5</td>
</tr>
<tr>
<td>MATH 010A-MATH 010B-MATH 010C</td>
<td>4 4 4</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Biological Science w/Lab</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
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</table>

**Junior Year**

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</thead>
<tbody>
<tr>
<td>CHEM 110A-CHEM 110B, CHEM 113</td>
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<td>4 4 4</td>
</tr>
<tr>
<td>CHEM 111, CHEM 140</td>
<td>4 4</td>
<td>4 4</td>
</tr>
<tr>
<td>CHEM 005, CHEM 125, CHEM 191</td>
<td>5 5 1</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>8 4 8</td>
<td></td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
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**Senior Year**

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<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<td>4 4</td>
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<tr>
<td>CHEM 166</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Electives</td>
<td>12 8 4</td>
<td></td>
</tr>
<tr>
<td><strong>Total Units</strong></td>
<td>12 12 12</td>
<td></td>
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</tbody>
</table>

**Minor**

The minor in Chemistry consists of 28 upper-division units in chemistry.

1. No more than 8 of the 28 upper-division units may be in courses required in the student’s major.
2. At least one of the courses used to satisfy the 28 units must be in CHEM 125, CHEM 111, CHEM 140 or CHEM 166 (courses which include laboratory work).

All of the upper-division courses in chemistry have a prerequisite of CHEM 001A.

**GRADUATE PROGRAM**

Fields of specialization (subdisciplines) offered by the Department of Chemistry are analytical chemistry, inorganic chemistry, organic chemistry, and physical chemistry. Research is also carried out in bioanalytical, bioinorganic, bioorganic, and biophysical chemistry and in chemical physics, environmental/ atmospheric, organometallic chemistry, and neuroscience. For additional information on the latter, please see Neuroscience Graduate Study in the Curricula and Courses section of this catalog. Students may begin their studies in the fall quarter. Although most students begin in the fall quarter, students entering in the following fall quarter and students with a normal B.S. level preparation, are strongly encouraged to complete their applications for admission as soon as possible. Normally applications for fellowships are awarded by February for students entering in the following fall quarter. Although most students begin in the fall quarter, students may begin their studies in the winter or spring quarter.

**Orientation Examinations**

All students admitted to regular graduate status in chemistry are required, at the beginning of their first quarter in residence, to take orientation examinations. The examinations are normally given during two consecutive days starting up to one week prior to the first day of instruction. Although a notice of the times and places of these examinations is sent to each student admitted to regular graduate status in chemistry, it is the student’s responsibility to be on the campus early enough to check the bulletin boards in Pierce Hall for this information. Students working toward advanced degrees in chemistry take these examinations in the four subdisciplines: analytical, inorganic, organic, and physical chemistry. The purpose of these examinations is to assist the student’s undergraduate preparation. The results permit the faculty to determine the course program that will most effectively aid the students’ development in their chosen subdisciplines.

**Master’s Degree**

Requirements are:

1. Satisfactory performance in orientation examinations in analytical, inorganic, organic, and physical chemistry
2. General University requirements, and departmental requirements for either Plan I or Plan II.

**Plan I**

a) At least 36 units of approved courses and graduate research of which five regular lecture courses in the CHEM 200-249 series (CHEM 110A or CHEM 110B, CHEM 111, CHEM 125, and CHEM 150A or CHEM 150B may apply under certain circumstances) must be included. A maximum of 12 units of seminar courses (CHEM 250-259) and a maximum of 12 units of graduate research (but not those numbered CHEM 260-289) may apply towards the 36 units.

b) A thesis

c) A final oral examination on the thesis may be required.

**Plan II**

a) At least 36 units of approved courses of which at least 18 must be in regular lecture courses numbered CHEM 200-249 (CHEM 110A or CHEM 110B, CHEM 111, CHEM 125, and CHEM 150A or CHEM 150B may apply under certain circumstances) and up to 12 units of graduate seminar courses numbered CHEM 250-259. Those numbered CHEM 260-289 are specifically excluded.

b) Passing at least two cumulative examinations

**Doctoral Degree**

The requirements are (1) orientation examinations in analytical, inorganic, organic, and physical chemistry; (2) general University requirements; (3) departmental requirements.

**Program of Study**

A program of study will be required by the departmental committee on graduate study on the basis of the students’ performance on the orientation examinations and a consideration of their subdisciplines. For students with a normal B.S. level preparation, the typical course pattern for each subdisci-
pline is as follows: analytical (a minimum of three courses selected from CHEM 221A-CHEM 221B-CHEM 221C-CHEM 221D-CHEM 221E plus two other courses), inorganic (CHEM 231 plus four other courses); organic (CHEM 211A-CHEM 211B-CHEM 211C plus two other courses) and physical (a minimum of three courses selected from CHEM 201A-CHEM 201B-CHEM 201C-CHEM 201D-CHEM 201E plus two other courses).

Cumulative Examinations. To encourage a planned program of study and literature reading carried out concurrently with research, the major written examinations in each subdiscipline offered for the doctor's degree (namely, analytical, inorganic, organic and physical chemistry) shall consist of cumulative examinations. Nine examinations are given each year, the first in September and the last in June. Students may begin the cumulative examinations at any time during their first year in residence. Once the examination program has been started, students may elect to take the examinations sequentially or skip selected examinations at their discretion. However, no student will be given more than the 15 attempts to pass the six (6) examinations needed to satisfy the requirement. In addition, the six (6) examinations must be passed before the end of the second year in residence.

Foreign Languages. A reading knowledge of German, French, or Russian is recommended but not required for the doctoral degree in chemistry.

Oral Qualifying Examination. After passing the required number of cumulative examinations, the candidate is given an oral examination by the doctoral committee. This examination consists in part of defending an original proposition and is designed to test the extent of the candidate's development and their breadth of knowledge in chemistry and related fields.

Teaching Assistant Experience. Three quarters of service as a teaching assistant, or equivalent, are normally required.

The normative time to the Ph.D. degree is 15 quarters.
taken concurrently) or equivalents or consent of instruc-
tor. Chromatographic separation, electrochemistry, and
principles of spectroscopic techniques are presented as
an introduction to instrumental methods and their use in
chemistry. Graduate students may register for either lec-
ture only (3 units) or for lecture and laboratory (5 units).

CHEM 135. Chemistry of the Clean and
Polluted Atmosphere. (4) W
Lecture, three hours; discussion, one hour. Prerequi-
site(s): CHEM 112A-CHM 112B or consent of instructor; ENSC 102 recommended. Structure of the troposphere and stratosphere; formation of atmospheric ozone; trosphoric NOx chemistry; methane oxidation cycle; phase distributions of chemicals; wet and dry deposition; chemis-
ty of volatile organic compounds; formation of photo-
chemical air pollution; modeling of air pollution and con-
trol strategies: stratospheric ozone depletion and global
warming. Cross-listed with ENSC 135 and ENTX 135.

CHEM 136. Chemistry of Natural Waters. (4) S
Lecture, three hours; discussion, one hour. Prerequi-
site(s): CHEM 105 with a grade of "C" or better or
ENSC 104/SWSC 104 with a grade of "C" or better or con-
tent of instructor: Introduction to processes controlling the
chemical composition of natural waters. Topics include
chemical equilibrium, acid-base and coordination chemistry, oxidation/reduction reactions, precipitation-
dissolution, air-water exchange, and use of equilibrium and
kinetic models for describing marine nutrient, trace
metal, and sediment chemistry. Cross-listed with
ENSE 136, ENTX 136, and SWSC 136.

CHEM 140. Environmental Chemistry Laboratory. (4) S
Lecture, two hours; laboratory, eight hours. Prerequi-
site(s): CHEM 125 with a grade of "C" or better; CHEM 110A or CHEM 109 with a grade of "C" or bet-
ter; or consent of instructor: Theory and application of
chemical techniques for the analysis of environmentally
relevant chemical processes. Discusses gas phase, con-
densed phase, surface, and particulate chemistry. Topics
include "acid rain," photochemical smog, ozone deple-
tion, and chemical analysis monitoring.

CHEM 150A. Inorganic Chemistry. (4) W
Lecture, three hours; discussion, one hour. Prerequi-
site(s): CHEM 112A-CHM 112B-CHM 112C with grades of "C" or better; CHEM 110A or CHEM 109 with a grade of "C" or better. A systematic introduction to the
reactions, structure, and bonding of important classes of inorganic compounds. Emphasis on non-
transition metal chemistry.

CHEM 150B. Inorganic Chemistry. (4) S
Lecture, three hours; discussion, one hour. Prerequi-
site(s): CHEM 150A with a grade of "C" or better. A systematic introduction to synthesis, reactions,
structure, and bonding of important classes of inorganic
compounds. Emphasis on transition metal chemistry.

CHEM 166. Advanced Structural and Synthetic
Methods. (2-4) S
Lecture, two hours; laboratory, eight hours. Prerequi-
site(s): CHEM 112C with a grade of "C" or better;
CHEM 125 and CHEM 150A recommended. Methods
for the characterization of organic and inorganic com-
ounds. Advanced methods of synthesis of organic and
inorganic compounds, such as vacuum, inert atmosphere,
high-pressure, and photochemical techniques. Hands-on
use of spectroscopic: nuclear magnetic resonance and
optical spectroscopy and mass spectrometry and com-
puter-based methods for structural characterization.
Non-chemistry majors: Graduate students may register for
lecture (2 units) or for lecture and laboratory (4 units).

CHEM 190. Special Studies. (1-5)
To be taken with the consent of the chair of the depart-
ment as a means of meeting special curricular problems.

CHEM 191. Seminar in Chemistry Careers. (1) S
Seminar, one hour. Prerequisite(s): upper-division stand-
ning, Oral reports and discussions by students, faculty, and
visiting speakers. Required of chemistry majors normally
taken in the spring of the junior year. Graded Satisfactory
("S") or No Credit (NC).

CHEM 197. Research for Undergraduates. (1-4)
Research, variable hours. Prerequisite(s): sophomore or
junior status and consent of instructor: An introduction to
the methods of research in chemistry. The student will
conduct an investigation in an area of chemistry under the supervision of a chemistry faculty member and submit a written report on his work. Not to be taken by seniors. Total credit for 197 may not exceed 6 units.

CHEM 198-1. Individual Internship. (1-4)
Internship, three to twelve hours; term paper or prepara-
tion for presentation, one to four hours. Prerequisite(s): upper-division standing in chemistry, consent of instruc-
tor: Industrial work experience coordinated and supervi-
sed by a chemistry faculty member and an off-campus sponsor: A term paper or presentation is required. Course is repeatable to a maximum of 6 units.

CHEM 199, Senior Research. (1-4)
Research, variable hours. Prerequisite(s): senior status
and consent of instructor: Research in chemistry under the
supervision of a faculty member in chemistry. The student will submit a written report on his work. Total credit for 199 and/or CHEM 199H may not exceed 9 units.

CHEM 199H, Senior Honors Research. (1-5)
Research, variable hours. Prerequisite(s): senior status
and consent of instructor: Research in chemistry under the
supervision of a faculty member in chemistry. The student will submit a written report on his work. Total credit for CHEM 199 and/or CHEM 199H may not exceed 9 units.

CHEM 201A-CHEM 201B-CHEM 201C-
CHEM 201D-CHEM 201E.
Advanced Physical Chemistry. (3-3-3-3-3)
Lecture, two hours (2 units) or three hours (3 units).

CHEM 201A-CHEM 201B-CHEM 211C.
Advanced Organic Chemistry. (3-3-3)
Lecture, three hours. Prerequisite(s): CHEM 211A-CHEM
211B-CHEM 211C. An advanced treatment of synthetic
organic chemistry. CHEM 215A is not a prerequisite to
CHEM 215B.

CHEM 215A-CHEM 215B.
Physical Organic Chemistry. (3-3)
Lecture, three hours. Prerequisite(s): CHEM 211A-CHEM
211B-CHEM 211C. An advanced treatment of physical
organic chemistry.

CHEM 219 (E-Z). Advanced Topics in Organic
Chemistry. (2-3)
Lecture, two hours (2 units) or three hours (3 units).
Prerequisite(s): consent of instructor. Selected advanced
topics from modern organic chemistry. The contents of
these courses will vary. Course may be repeated with dif-
ferent topic (and different letter).

CHEM 221A-CHEM 221B-CHM 221C-
CHEM 221D-CHM 221E.
Advanced Analytical Chemistry. (3-3-3-3-3)
Lecture, three hours. Prerequisite(s): CHEM 215, Topics
include CHEM 221A Separation Science; CHEM 221B:
Optical Spectroscopy; CHEM 221C: Chemical Instrument-
ation; CHEM 221D: Electrochemistry; CHEM 221E:
Nuclear Magnetic Resonance and Mass Spectroscopy.

CHEM 229 (E-Z). Advanced Topics in Analytical
Chemistry. (2-3)
Lecture, two hours (2 units) or three hours (3 units).
Prerequisite(s): consent of instructor. Selected advanced
topics from modern analytical chemistry. The contents of
these courses will vary. Course may be repeated with dif-
ferent topic (and different letter).

CHEM 231A-CHM 231B-CHM 231C.
Advanced Inorganic Chemistry. (3-3)
Lecture, three hours. Prerequisite(s): CHEM 150B.
Coordination and organometallic chemistry of the transi-
tion metal elements. An in-depth treatment of reaction
mechanisms, synthetic principles, stereochemical fea-
tures, and metal ion catalysis.
CHEM 239 (E-Z). Advanced Topics in Inorganic Chemistry. (2-3)
Lecture, two hours (2 units) or three hours (3 units). Prerequisite(s): consent of instructor. Selected advanced topics from modern inorganic chemistry. The contents of these courses will vary. Course may be repeated with different topic (and different letter).

CHEM 241. Bioorganic Chemistry. (3)
Lecture, three hours. Prerequisite(s): CHEM 109 or CHEM 110A; and CHEM 110B, CHEM 135/ENSC 135/ENST 135; or consent of instructor. Atmospheric chemistry of airborne chemicals. Intermedia partitioning. Structure of the atmosphere. Gas-particle distributions of chemicals, and wet and dry deposition of gases and particles. Atmospheric reactions of organic compounds, with emphasis on toxics. Theoretical and experimental methods for determination of atmospheric lifetimes and products of chemicals. Cross-listed with ENST 244.

CHEM 245. Chemistry and Physics of Aerosols. (3)
Lecture, three hours. Prerequisite(s): CHEM 109, CHEM 110B; or consent of instructor. Fundamentals of chemical and physical processes controlling behavior and properties of airborne particles. Topics include particle mechanics; electrical, optical, and thermodynamic properties; nucleation; surface and aqueous-phase chemistry; gas-particle partitioning; sampling; size and chemical analysis; atmospheric aerosols; and environmental effects. Cross-listed with ENST 245 and SWSC 245.

CHEM 246. Fate and Transport of Chemicals in the Environment. (4)
Prerequisite(s): CHEM 109 or CHEM 110B; CHEM 112A-CHEM 112B; CHEM 112C; or consent of instructor. Identification of toxics and their sources in the environment; equilibrium partitioning of chemicals in the environment (between air, water, soil, sediment, and biota) using physico-chemical properties; transport and chemical transformations of chemical compounds in air, water, and soil media. Includes case studies of fate and transport of selected toxic chemicals. Cross-listed with ENST 200.

CHEM 250. Graduate Seminar in Chemistry. (1)
Seminar, one hour. Prerequisite(s): graduate standing. Oral reports by graduate students, faculty, and visiting scholars on current research topics in chemistry. Graded Satisfactory (S) or No Credit (NC). Course isrepeatable.

CHEM 251. Graduate Seminar in Analytical Chemistry. (2)
Seminar, two hours. Prerequisite(s): graduate student status. Oral reports and discussion by students, faculty, and visiting scholars on current research topics in analytical chemistry. The course is offered each quarter. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course isrepeatable.

CHEM 252. Graduate Seminar in Inorganic Chemistry. (2)
Seminar, two hours. Prerequisite(s): graduate student status. Oral reports and discussion by students, faculty, and visiting scholars on current research topics in inorganic chemistry. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course isrepeatable.

CHEM 253. Graduate Seminar in Organic Chemistry. (2)
Seminar, two hours. Prerequisite(s): graduate student status. Oral reports and discussion by students, faculty, and visiting scholars on current research topics in organic chemistry. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course isrepeatable.

CHEM 254. Graduate Seminar in Physical Chemistry. (2)
Seminar, two hours. Prerequisite(s): graduate student status. Oral reports and discussion by students, faculty, and visiting scholars on current research topics in physical chemistry. The course is offered each quarter. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course isrepeatable.

CHEM 256. Analysis of Single Cells and Subcellular Organelles. (2) F,W,S
Seminar, two hours. Prerequisite(s): graduate standing. Seminar in Chemistry or Soil and Water Sciences. Oral presentations by visiting scholars and UC faculty on current research topics in environmental chemistry, environmental sciences, and environmental toxicology. Graded Satisfactory (S) or No Credit (NC). Course isrepeatable. Cross-listed with SWSC 257.

CHEM 260. Analysis of Single Cells and Subcellular Organelles. (2) F,W,S
Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the study of individual biological entities and biochemical processes at the cellular and subcellular levels. Special emphasis is placed on the use of capillary electrophoresis (separation parameters and detectors) for cellular analysis. Other topics include microscopy, cell culture, biochemistry, instrumentation design, and laser micro-manipulators, as related to single cells and single organelles. Letter grades are assigned to students who present a seminar or submit a term paper; other students are graded Satisfactory (S) or No Credit (NC) based on seminar participation. Lillard

CHEM 263. Synthesis of Novel Molecules. (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Focuses on the mechanism and design of enantioselective reactions. Letter grades will be assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). Course isrepeatable. Angle

CHEM 264. Novel Synthesis in Inorganic Chemistry. (2)
Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. Discussion of strategies for the synthesis of novel structures in inorganic coordination, organometallic, and materials chemistry. Letter grades are assigned to students who present a seminar or submit a paper; others are graded Satisfactory (S) or No Credit (NC) based on seminar participation. Course isrepeatable. Reed

CHEM 265. Raman Spectroscopy of Biological Systems. (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Applications of Raman spectroscopy to the characterization of the structure and function of biological membranes and membrane proteins. Emphasis will be placed on resonance enhanced Raman scattering, including the theoretical origins of resonance enhancement. Letter grades are assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). Course isrepeatable. Bocian

CHEM 266. Chemical Microsensors for In Situ Measurements. (2)
Seminar, two hours. Prerequisite(s): consent of instructor. The development and characterization of novel chemical microsensors. Analytical properties such as time response selectivity and sensitivity will be investigated and optimized for use in the measurement of dynamic chemical events in situ in the mammalian brain. Letter grades will be assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). Course isrepeatable. Kahr

CHEM 268. Organometallics in Organic Synthesis. (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Discussion and reactions of organometallic compounds with emphasis on development of new organic reactions. Letter grades will be assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Midland

CHEM 270. Synthesis of Molecules of Biological and Theoretical Interest. (2)
Lecture, two hours. Prerequisite(s): consent of instructor. Synthesis, reactions, and properties of molecules of naturally occurring substances (e.g., vitamin D, retinal and other natural products) and molecules of theoretical interest (e.g., non-benzenoid aromatics, etc.). Discussions of modern synthetic approaches, reaction mechanisms and structure-activity relationships. Letter grades will be assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Oakamura

Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the design and synthesis of highly conjugated organic molecules and polymers for application in molecular-based devices such as sensors, light emitting diodes, and conductors. Letter grades are...
CHEM 272. Characterization of Atmospheric Aerosol Systems (2)
Seminar, two hours. Prerequisite(s): consent of instructor. The development of instrumentation for the detection of individual atmospheric aerosol particles in situ. Emphasis on characterizing the chemistry of aerosol systems as a function of size and composition. Letter grades will be assigned to students who present a term paper or present a seminar; others will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Prather

CHEM 273. Bioanalytical Nuclear Magnetic Resonance Spectroscopy (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Development of Pulse Fourier transform NMR techniques and their application to the characterization of peptides, proteins and intact cells. Letter grades will be assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Rabenstein

CHEM 274. Metal-Carbon Bond Synthesis (2)
Lecture, one hour; discussion, one hour. Prerequisite(s): consent of instructor. Techniques of metal-carbon bond synthesis. Reactions of metal-carbon systems. Characterization of metal-carbon systems, especially by nuclear magnetic resonance. Letter grades will be assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Rettili

CHEM 275. Bioorganic Chemistry of Nucleic Acids (2)
Seminar, two hours. Prerequisite(s): consent of instructor. The design, synthesis, and evaluation of nucleotides with novel hydrogen-bonding capabilities as well as oligonucleotides capable of regulating gene expression. Discussion of ribonucleic acid catalysis, including possible catalytic functions that have not yet been determined. Letter grades will be assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Switzer

CHEM 276. Enantioselective Homogeneous Catalysis (2)
Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. Design and preparation of novel organocatalytic and organometallic compounds with applications to catalytically activated, to novel catalytic processes, and to synthesis of organometallic materials. Discussions of current publications on homogeneous catalysis and reaction mechanisms. Focus on frontiers in catalysis in the overall context of synthetic methodologies. Letter grades are assigned to students who present a seminar or submit a term paper; other students are graded Satisfactory (S) or No Credit (NC). Hollis

CHEM 277. Surface Chemistry (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Discussions for new advances in surface science, concentrating mainly on the use of molecular level. Letter grades will be assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Zerza

CHEM 278. Nuclear Magnetic Resonance: Theory, Techniques, Applications (2)
Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the development of solid-state and liquid-state nuclear magnetic resonance (NMR) as a probe of molecular structure, function, and dynamics with applications that range from chemistry to physics and biology. Letter grades are assigned to students who present or submit a seminar or submit a term paper; other students are graded Satisfactory (S) or No Credit (NC). Based on seminar participation. Course is repeatable. Mueller

CHEM 279. Molecular Spectroscopy, (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Properties of excited states of molecules. Molecular photochemistry and photophysics. Theory of radiativeless transitions. Kinetics and mechanism of excited state decay. Laser spectroscopy. Letter grades will be assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Scott

CHEM 280. Chemistry and Biochemistry of Gaseous Molecules (2)
Lecture, one hour; discussion, one hour. Prerequisite(s): consent of instructor. Reactions and properties of organic compounds and in the absence of bulk media. Preparative mass spectrometry and ion-molecule reactions. Molecular mechanisms in the sense of smell. Letter grades will be assigned to students who present a seminar or submit a term paper; others will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Morton

CHEM 282. Elementary Processes in Atmospheric Chemistry (2)
Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. Applies state-of-the-art laser techniques to investigate elementary processes in atmospheric chemistry. Emphasis is quantitative understandings of atmospheric free-radical intermediates, their photochemistry, and their reaction mechanisms. Letter grades are assigned to students who present a seminar or submit a term paper; other students are graded Satisfactory (S) or No Credit (NC). Course is repeatable. Zhang

CHEM 283. Development of Inorganic Solid State Materials (2)
Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the development of advanced materials such as optical, electronic, and porous materials. Topics include synthetic methods, characterization techniques, property measurements, and device applications. Special emphasis is placed on the design of synthetic strategies for the discovery of new functional materials with novel properties. Letter grades are assigned to students who present a seminar or submit a term paper; other students receive Satisfactory (S) or No Credit (NC) based on seminar participation. Course is repeatable. Switzer

CHEM 287. Colloquium in Neuroscience, (1)
Colloquium, one hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports on current research topics in neuroscience with presentations by visiting scholars, faculty, and students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 287, BIOL 287, BMSC 287, NSC 287, and PSYC 287. Hatton in charge

CHEM 289. Special Topics in Neuroscience, (2)
Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) may vary each time course offered. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 289, BIOL 289, BMSC 289, ENTM 289, NSC 289, and PSYC 289. Hatton in charge

CHEM 290. Research for Thesis or Dissertation, (1-12)
Prerequisite(s): consent of a staff member. Research in analytical, inorganic, organic, or physical chemistry under the direction of a member of the staff. A written report is required of the research study. Graded Satisfactory (S) or No Credit (NC).

CHEM 297. Directed Research, (1-6)
Prerequisite(s): consent of a staff member. Research in analytical, inorganic, organic, or physical chemistry under the direction of a member of the staff. A written report is required of the research study. Graded Satisfactory (S) or No Credit (NC).

CHEM 301. Oral Presentations in Chemistry, (1)
Lecture, one hour. The technique of oral presentation, emphasizing the problems that arise in chemistry laboratory and classroom situations. Designed primarily for new graduate students in the Chemistry Department. Graded Satisfactory (S) or No Credit (NC).

CHEM 302. Teaching Practicum, (1-2)
Lecture/laboratory, four to eight hours. Prerequisite(s): Limited to Chemistry Department teaching assistants and Associates-In-Chemistry. Supervised teaching in undergraduate courses in Chemistry. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Units are not applicable to degree unit requirements.

CHEM 403. Special Topics in Chemical Research, (1)
Lecture, one hour. Prerequisite(s): graduate status and consent of instructor. The course will cover special techniques including spectroscopy, electronics, etc. used in chemical research. The course will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

THE CHICANO BILINGUAL-BICULTURAL STUDIES MINOR

Adalberto Aquirre, Jr., Ph.D. Chair
O fice, 140 University Office Building
(909) 787-4577, x1833

Committee in Charge
Adalberto Aquirre, Jr., Ph.D. (Sociology)
Philip O. Gericke, Ph.D. (Hispanic Studies)
Flora I. Ortiz, Ph.D. (Education)
Yolanda Venegas, Ed.D. (Education)
Pamela O'Brien, Ph.D.

Dean, College of Humanities, Arts, and Social Sciences, ex officio

The Chicano Bilingual-Bicultural Studies minor provides the student with a basic understanding of the Spanish language and of the Mexican American bicultural contacts in which that language is used in the southwestern United States.
1. Lower-division requirements (8 units)
   a) Four (4) units from ETST 002, ETST 004/HIST 004
   b) Four (4) units from one of the following:
      (1) SPN 006
      (2) Two quarters of SPN 027A-SPN 027B
      (3) Any upper-division course taught in Spanish language

2. Upper-division requirements (16 units)
   a) One course in the general area of Education and Bilingualism from ETST 146/EDUC 146, ETST 163/SOC 163, ETST 165/SOC 165, ETST 166
   b) One course from the general area of Societal Perspectives on the Chicano Experience ETST 142
   c) One course from ETST 123, ETST 124, ETST 126, ETST 128/SOC 128
   d) One course in Chicano Art or Literature from ETST 108P, ETST 114, ETST 153/INST 153, ETST 191N

A minor is a set of courses focused on a single discipline or an interdisciplinary thematic area. There can be no substitution for the courses listed as constituting a minor without approval of the governing department or committee. There is no limit on the number of minors a student can declare. Students must declare the minor(s) before their final degree check before graduation, by completing a petition with the College of Humanities, Arts, and Social Sciences Student Affairs Office, the College of Natural and Agricultural Sciences Student Affairs Office, or the College of Engineering Student Affairs Office depending on their major. Prior approval by the department or committee offering the minor is required. The minor is noted on the transcript at the time the degree is conferred.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

### Comparative Literature and Foreign Languages

**Professors**
- David K. Danow, Ph.D. Russian and Comparative Literature
- Reinhold Grimm, Ph.D. Comparative Literature and German
- Georgy M. Gagelberg, Ph.D.
- Jules F. Levin, Ph.D. Linguistics and Russian
- Thomas F. Scanlon, Ph.D. Classics and Comparative Ancient Civilizations
- George E. Susser, Ph.D. Comparative Literature
- Yenna Wu, Ph.D. Asian Languages and Civilizations

**Professors Emeriti**
- Anastasius C. Bandy, Ph.D. Classics
- Sam J. Borg, Ph.D. French
- Donald G. Daviau, Ph.D. German
- Henry W. Decker, Ph.D. French
- Robert B. Griffin, Ph.D. Comparative Literature and French
- Keith H. Macfarlane, Ph.D. French
- Eluid Martine, Ph.D. Comparative Literature (Comparative Literature and Foreign Languages/Creative Writing)
- Louis A. Pedrotti, Ph.D. Russian
- Josef Purkart, Ph.D. German
- Lubomir Radoyce, M.A. Comparative Literature and Russian
- Guenther C. Rimbach, Ph.D. German
- Ben F. Stoltzfus, Ph.D., Litt.D. Comparative Literature and French

**Associate Professors**
- Stephanie B. Hammer, Ph.D. Comparative Literature and German
- Kathleen A. McHugh, Ph.D. Comparative Literature and Him and Visual Culture
- Vivian-Lee Nyitray, Ph.D. Asian Languages and Civilizations (Religious Studies/Comparative Literature and Foreign Languages)
- Lisa Raphals, Ph.D. Chinese and Comparative Ancient Civilizations
- Theda Shapiro, Ph.D. French
- Yang Ye, Ph.D. Asian Languages and Civilizations

**Assistant Professors**
- Christopher Bolton, Ph.D. Japanese
- Michelle E. Bloom, Ph.D. Comparative Literature and French

**Lecturers**
- Jingsong Chen, Ph.D. Chinese
- Yoshiko T. Hain, M.A. Japanese
- Nicoletta Tinozzi Mehrmard, Ph.D. Italian
- Sylvia Ochs, M.A. German
- Wendy J. Raschke, Ph.D. Classics and Comparative Ancient Civilizations
- Kyoko Sazawa, M.A. Japanese
- Heidi Waltz, Ph.D. Linguistics and German

### Chinese

The B.A. in Chinese is for the student interested in the study of the Chinese language and Chinese culture or literature.

- (a) The Chinese Language and Literature Option is designed for students who wish to pursue graduate studies in the field.
- (b) The Chinese Language and Culture Option is for students who want to approach Chinese culture and civilization in greater breadth.

### Classical Studies

The B.A. in Classical Studies combines the study of Greek and/or Latin language and literature with courses which explore the historical, philosophical, political, and cultural developments of Greece and Rome and their impact on Western civilization.

### Comparative Ancient Civilizations

Students employ the methods of humanities and social sciences in the comparison study of several major cultures of the past. Majors will acquire skills of historical and social analysis, multicultural awareness, and insight into constructions of civilizations in general.

### Comparative Literature

While students majoring in Comparative Literature must have a knowledge of the languages involved in the literatures of their...
choice, Comparative Literature courses themselves are open to all students. All work is done in translation and the courses are given in English. Students take both Comparative Literature and World Literature courses for the major. World Literature courses do not comprise a degree program; the topics are more general than those in Comparative Literature and include a whole range of interdisciplinary studies on the interrelations of literature.

The department offers the B.A. degree in Comparative Literature and the M.A. and Ph.D. graduate degrees.

**French, German, and Russian Studies**

The B.A. degree is offered in French, German, and Russian Studies. Students interested in pursuing graduate studies in areas not offering the M.A. or Ph.D. may do so through the graduate program in Comparative Literature. Requirements for degrees include proficiency in the language of the literature.

(a) The Literature Option is available for majors in French and German.

(b) The Language Option is available for majors in German.

(c) The Civilization Option is available for majors in French and German.

Civilization studies are concerned with the culture of the language or literature of a student focus, and with the people of the country where that language or literature exists or existed. Specific requirements for the various civilization options are listed under French, and German.

**Language**

The Language Major allows a student to specialize in two or three foreign languages through a knowledge not only of the languages themselves but also of the bases of language (linguistics), examples of their creative use (literature), and the cultures which they reflect (civilization).

**Linguistics**

A B.A. in Linguistics is available through a program administered by an interdepartmental committee. Some foreign language study is essential for specialization in this discipline, as well as the pursuit of research projects and other kinds of practical work in language-related areas.

**Other Course Work**

The Department also offers course work in Asian literature, Chinese (language, literature, and culture), Civilization, Italian (language and literature), Japanese (language, literature, and culture), Korean (language), and World Literature. Doctoral studies in French and German are available through Comparative Literature.

**GRADUATE DEGREES**

Comparative Literature (interliterary) M.A.

Comparative Literature (interdisciplinary) Ph.D.

UC Tri-Campus Graduate Program in Classics M.A. and Ph.D.

**Teaching Assistantships and Fellowships**

Teaching assistantships and fellowships are available. Teaching assistants will normally be held for ITLG 301 (Teaching of Foreign Language at the College Level). Course work and/or teaching experience at another college-level institution may be accepted in fulfillment of this requirement.

**Teaching Credential**

Students interested in obtaining a secondary teaching credential in the state of California are advised that the Department, in conjunction with the Graduate School of Education, offers state-approved credential waivers for the Multiple Subjects Credential.

**Education Abroad Program**

The Comparative Literature and Foreign Languages Department encourages eligible students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units towards graduation. Because the choice of courses to be taken here and courses to be taken abroad depends on personal goals and the country visited, early planning is advised. For advice consult the departmental Student Affairs Officer or Professor Shapiro for assistance. For further details see Education Abroad Program under International Services Center in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

**Degree Requirements**

**University Requirements**

See the Undergraduate Studies section for requirements that all students must satisfy.

**College Requirements**

See Degree Requirements: College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

**Major Requirements**

Requirements for the majors and courses offered are described in the sections that follow.

**Civilization**

**Classical Studies**

Classics

Greek

Latin

**Comparative Studies**

Comparative Ancient Civilizations

Comparative and World Literature

**East Asian Languages and Civilizations**

Asian Literature

Chinese (Mandarin)

Japanese

Korean

**Foreign Languages, Language, and Linguistics**

French

German

Italian

Russian Studies

Language Literatures and Languages

Linguistics

**Program Committees**

**Civilization**

Ochs, Raschke, Shapiro, Tinozzi-Mehrmand, Ye

**Classical Studies**

Glidden (Philosophy), Griffin, King, Raschke, Scanlon

**Comparative Studies**

Comparative Ancient Civilizations: Chia (History), Glidden (Philosophy), Griffin, King, Laursen (Political Science), Njträy, Raphals, Raschke, Rochberg (History), Saltman (History), Scanlon, Smith (Religious Studies), Shrenski (Religious Studies), Taube (Anthropology), Taylor (Anthropology), Vélez-Ibáñez (Anthropology)

Comparative and World Literature: Bloom, Danow, Crimm, Gelpi-berger, Hammer, McCullogh, Raphals, Scanlon, Slusser, Stoltzfus, Zhang

**East Asian Languages and Civilizations**

Bolton, Chen, Hain, Huh, Njträy, Raphals, Sagawa, Wu, Ye
THE UC TRI-CAMPUS GRADUATE PROGRAM IN CLASSICS

(UC Irvine, UC Riverside, and UC San Diego)

The University of California Tri-Campus graduate program is a joint venture that combines faculty in Classics and related disciplines from the three southernmost University of California campuses.

Students accepted into the program may enroll at any of the three campuses, but they normally apply for admission to the Tri-Campus program through UC Irvine, which is the main location for instruction and administration. Applications to the Tri-Campus program will be 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 philosophy. 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 (CLA 200A, CLA 200B, CLA 200C, and CLA 201), seminars (UC Riverside CLA 250/UC Irvine CLASSIC 220) and reading courses (UC Riverside CLA 252/UC Irvine CLASSIC 205).

All 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.

Master’s Degree

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 expected time for completion of the M.A. degree is two years. The normal course load is three 200-level courses each quarter. Minimum course requirements are four quarters of CLA 200A, CLA 200B, CLA 200C, and CLA 201; five quarters of UC Riverside CLA 292/UC Irvine CLASSIC 205; and four quarters of UC Riverside CLA 250/UC Irvine CLASSIC 220. (UC Riverside CLA 290/UC Irvine CLASSIC 280 may be substituted for these courses at the discretion of the faculty.) A reading knowledge of either German, French, Italian, or equivalent language, demonstrated by examination or other means, is a also a requirement.

Doctoral Degree

The requirements for the Ph.D. degree are three years (nine quarters) of course work. Minimum course requirements are four quarters of CLA 200A, CLA 200B, CLA 200C, and CLA 201; five quarters of UC Riverside CLA 292/UC Irvine CLASSIC 205; and six quarters of UC Riverside CLA 250/UC Irvine CLASSIC 220 or an equivalent course. (UC Riverside CLA 290/UC Irvine CLASSIC 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 the third year. At this stage, and during the fourth year of study, students are expected to have read extensively in the primary texts and in literary history and theory and in ancient history. In addition, experience in supervised teaching and/or research activity is normally required. 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. is six years.

The facilities, course offerings, programs, and individual faculty mentorship of all three campuses are available to students in the Tri-Campus degree program. The resources of the program are enhanced through a cooperative teaching arrangement among the Tri-Campus program and the Classics graduate programs of UC Los Angeles and the University of Southern California.

Faculty

Thomas F. Scanlon, Ph.D.
Professor of Classics, and Program Director, UCR
Greek and Roman Historiography, Ancient Athletics

Georgios Anagnostopoulos, Ph.D.
Professor of Philosophy, UCSD
Ancient Greek Philosophy, Ethics, Metaphysics

Luci Berkowitz, Ph.D.
Professor Emeritus of Classics, UCI
Greek prose, Historiography

Walter Donlan, Ph.D.
Professor of Classics, graduate advisor, UCI
Early Greek literature, Greek Social History

Page duBois, Ph.D.
Professor of Classics and Comparative Literature, UCSD
Greek Literature, Rhetoric, Critical Theory, Cultural Studies

Anthony Edwards, Ph.D.
Associate Professor of Classics and Comparative Literature, UCSD
Epic, Greek Comedy, Critical Theory

Leslie Collins Edwards, Ph.D.
Lecturer in Classics and Comparative Literature, UCSD
Greek and Latin Literature, Aristotle, Poetics

Cynthia L. Claxton, Ph.D.
Lecturer in Classics, and graduate teaching supervisor, UCI

Richard I. Frank, Ph.D.
Associate Professor of History and Classics, UCI
Roman history, Latin Elegy and Satire, Classical Tradition

David Giddon, Ph.D.
Professor of Philosophy, UCR
Greek and Roman Philosophy

Anna Gnonosova, Ph.D.
Associate Professor of Art History, UCI
Byzantine and Medieval Art

Benjamin King, Ph.D.
Lecturer in Classics, UCR
Greek Literature and Philosophy
GRADUATE COURSES

Most of the following courses are taught at the UC Irvine campus.

CLA 200A. Contemporary Literary Theory and the Classics. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. An introduction to contemporary literary theory focusing on important critical approaches. Topics vary from year to year. Requires written work that explores theoretical issues and involves engagement with a Greek or Latin text. This work may, for example, illuminate some aspect of a theorist’s work, put two theorists into dialogue, or explore the usefulness of a particular approach to texts, authors, or genres. Taught at UC Irvine. Same as UC Irvine CLASSIC 200A. Course is repeatable.

CLA 200B. Diachronic Perspectives on Classical Antiquity. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. An introduction to the methods and perspectives of social scientific theory used to study the material and social dimensions of the ancient cultures of Greece and Rome. Taught at UC Irvine. Same as UC Irvine CLASSIC 200B. Course is repeatable.

CLA 200C. Greece and Rome in Their Contemporary Cultural Contexts. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. An introduction to the latest methods of computing for research and teaching. Taught at UC Irvine. Same as UC Irvine CLASSIC 200C. Course is repeatable.

CLA 201. Computing in Classical Studies. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. An introduction to the latest methods of computing for research and teaching. Taught at UC Irvine. Same as UC Irvine CLASSIC 201. Course is repeatable.

CLA 250. Seminar in Classics (4)
Seminar, three hours; individual study, three hours.
Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Focuses mainly, but not exclusively, on major literary topics. Subject matter varies. Taught at UC Irvine. Same as UC Irvine CLASSIC 220. Course is repeatable.

CLA 290. Directed Studies. (1-6)
Outside research, three to eighteen hours. Prerequisite(s): consent of instructor or graduate advisor; normally open only to students in the UC Tri-Campus Graduate Program in Classics. Supervised independent research. Same as UC Irvine CLASSIC 280. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CLA 292. Concurrent Studies in Classics. (2)
Individual study, six hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Concurrent enrollment in an advanced undergraduate Greek or Latin course, with credit awarded for additional reading and separate examinations. Same as UC Irvine CLASSIC 205. Course is repeatable.

CLA 297. Directed Research. (1-6)
Outside research, three to eighteen hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Research in preparation for the Candidacy Examination. Same as UC Irvine CLASSIC 290. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CLA 299. Research for the Thesis or Dissertation. (1-12)
Outside research, three to thirty-six hours. Prerequisite(s): admission to the UC Tri-Campus Graduate Program in Classics or consent of instructor. Directed research for the M.A. thesis or Ph.D. dissertation. Same as UC Irvine CLASSIC 299. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

See also CLA 302 under the Classics section.

ASIAN LANGUAGES AND CIVILIZATIONS

ASIAN LITERATURE

Subject abbreviation: ALT

UPPER-DIVISION COURSES

ALT 121. Masterworks of East Asian Literature. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): upper-division standing or consent of instructor. An introduction to ancient and modern East Asian literature with emphasis on some major works of Chinese, Japanese, and Korean literature in translation. Cross-listed with AST 121.

ALT 131. Women in Asian Literature. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): upper-division standing or consent of instructor. This course is a cross-cultural study of Asian women through the analysis of literary works including drama, fiction, and diaries in both classical and modern literature in China, Japan, Korea, and India. All readings are in English translations. Cross-listed with AST 151.

CHINESE (MANDARIN)

Subject abbreviation: CHN

Attention is directed to the Education Abroad programs in China (including Hong Kong) and Taiwan. Contact International Services for information, (909) 787-4113.

Major

The Chinese major is for students interested in the study of the Chinese language and Chinese culture or literature. Students should consult...
their advisors to design a set of courses on one of the following tracks. Track A is for students who may wish to pursue graduate studies in the field. Track B is for students who may want to approach Chinese culture and civilization in greater breadth.

**Track A: Chinese Language and Literature**

Students who major in Track A will be expected to have completed their third-year level of Chinese (CHN 101 series) or else to demonstrate equivalent proficiency. Proficiency can be demonstrated by placement examination, by challenging and testing out of CHN 101 series, or by successful completion of CHN 105, CHN 108, CHN 110 (E-Z), or CHN 115 (E-Z). Students will also complete a minimum of 44 units, distributed under the following three categories:

1. Twenty (20) units of upper-division courses in Chinese language, taught in Chinese:
   - CHN 105, CHN 108, CHN 110 (E-Z) (students may take more than one segment), CHN 115 (E-Z) (students may take more than one segment)

2. Sixteen (16) units of upper-division literature courses drawn from the following (students may take more than one segment of courses with (E-Z) designation):
   - CHN 104, CHN 110 (E-Z) (students may take more than one segment), CHN 115 (E-Z) (students may take more than one segment), CHN 130A-CHN 130B-CHN 130C, CHN 135/AST 135, CHN 136/AST 136, CHN 142/RLST 142/AST 142**, CHN 148/AST 148, CHN 185/AST 185, CHN 190 (may be repeated on different topics)
   - CPLT 144/RLST 144
   - HIST 180, HIST 181, HIST 182
   - RLST 103

3. Eight (8) units drawn from the following list, or any other course related to China, with advisor’s consent:
   - AHS 139/AST 139, AHS 140/AST 140, AHS 141/AST 141, AHS 143/AST 143
   - ALT 121/AST 121, ALT 131/AST 131
   - CHN 104, CHN 110 (E-Z) (students may take more than one segment), CHN 115 (E-Z) (students may take more than one segment), CHN 130A/CHN 130B, CHN 130C/CHN 130D, CHN 135/AST 135, CHN 136/AST 136, CHN 142/RLST 142/AST 142**, CHN 148/AST 148, CHN 185/AST 185, CHN 190 (may be repeated on different topics)
   - CPLT 144/RLST 144
   - HIST 180, HIST 181, HIST 182
   - RLST 103

**Track B: Chinese Language and Culture**

Students who major in Track B will be expected to have completed their third-year level of Chinese (CHN 101 series) or else to demonstrate equivalent proficiency. Proficiency can be demonstrated by placement examination, by challenging and testing out of CHN 101 series, or by successful completion of CHN 105, CHN 108, CHN 110 (E-Z), or CHN 115 (E-Z). Students will also complete a total number of 48 units, distributed under the following two categories:

1. Twenty (20) units of upper-division courses in Chinese language, taught in Chinese:
   - CHN 105, CHN 108, CHN 110 (E-Z) (students may take more than one segment), CHN 115 (E-Z) (students may take more than one segment)

2. Culture and Civilization requirement:
   - Twenty-eight (28) units of upper-division courses from the following courses, or any other course related to China, with advisor’s consent:
     - AHS 139/AST 139, AHS 140/AST 140, AHS 141/AST 141, AHS 143/AST 143
     - ALT 121/AST 121, ALT 131/AST 131
     - CHN 104, CHN 110 (E-Z) (students may take more than one segment), CHN 115 (E-Z) (students may take more than one segment), CHN 130A/CHN 130B, CHN 130C/CHN 130D, CHN 135/AST 135, CHN 136/AST 136, CHN 142/RLST 142/AST 142**, CHN 148/AST 148, CHN 185/AST 185, CHN 190 (may be repeated on different topics)
     - CPLT 144/RLST 144
     - HIST 180, HIST 181, HIST 182
     - RLST 103

* These courses may be used to fulfill the requirements under either category (a) or category (b), but not both.

** This course may be used to fulfill requirements under either category (b) or category (c), but not both.

** Minor**

The Chinese minor provides students the opportunity to complement their majors in different areas, such as Anthropology, Art History, Dance, Economics, History, Liberal Studies, Political Science, Religious Studies, etc., with basic communication skills and understanding of Chinese language and culture.

Students will be expected to have completed the third-year level of Chinese (CHN 101 series) or else to demonstrate equivalent proficiency. Proficiency can be demonstrated by placement examination, by challenging and testing out of CHN 101 series, or by successful completion of CHN 105, CHN 108, CHN 110 (E-Z), or CHN 115 (E-Z). Students will also complete a total number of 16 upper-division units, distributed as follows:

1. Eight (8) units drawn from the following courses:
   - CHN 105, CHN 108, CHN 110 (E-Z), or CHN 115 (E-Z) (Students may take more than one segment)

2. Eight (8) units drawn from the following courses, or any other course related to China, with advisor’s consent:
   - AHS 139/AST 139, AHS 141/AST 141, AHS 143/AST 143
   - ALT 121/AST 121, ALT 131/AST 131
   - CHN 105, CHN 108, CHN 110 (E-Z), or CHN 115 (E-Z) (Students may take more than one segment)
   - ALT 130A-AST 130B-CHN 130C/CHN 130D, CHN 135/AST 135, CHN 136/AST 136, CHN 142/CHN 148, CHN 185/CHN 185, AST 142/AST 142/RLST 142
   - CHN 104, CHN 110 (E-Z), CHN 115 (E-Z) (Students may take more than one segment), CHN 190 (may be repeated on different topics)
   - HIST 180, HIST 181, HIST 182
   - RLST 103, RLST 144/CPLT 144

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

**LOWER-DIVISION COURSES**

**CHN 001-002-003. First-Year Chinese. (4-4-4)**

Lecture, four hours. Prerequisite(s): none for CHN 001, CHN 001 or equivalent for CHN 002, CHN 002 or equivalent for CHN 003. An introduction to the sound system and grammar of Chinese, with attention to the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in Chinese as far as possible. Audio-lingual learning materials available in the language laboratory.

**CHN 004-005-006. Second-Year Chinese. (4-4-4)**

Lecture, four hours. Prerequisite(s): CHN 003 or equivalent for CHN 004, CHN 004 or equivalent for CHN 005; CHN 005 or equivalent for CHN 006. This comprehensive course on Chinese covers reading, listening, speaking, and writing aspects of the language. Lectures will be conducted primarily in Putonghua (Mandarin) and when necessary in English. The textbooks are in the standardized simplified characters.

**CHN 025. Conversation and Composition. (4)**

Lecture, three hours; extra reading, three hours. Prerequisite(s): CHN 003 or equivalent. Practice at the intermediate level in speaking and writing Chinese. Regular discussion and oral presentation of assigned written topics. A review of basic grammar with an aim to active oral and written command. Chinese.

**CHN 030. Introduction to Chinese Civilization. (4)**

Lecture, two hours: discussion, one hour; extra reading, three hours. Prerequisite(s): none. An introduction to Chinese civilization through an interplay of philosophical, historical, religious, and literary readings from the ancient times through the modern age. Audiovisual media is used. All work is done in English. Cross-listed with AST 030. Ye.

**CHN 040. Masterworks of Chinese Literature. (4)**

Lecture, three hours; outside research, three hours. Prerequisite(s): none. Reading and discussion of selected great works of Chinese literature (in English translation) with attention to cultural contexts. Various critical methods and approaches are used. Cross-listed with AST 040. Ye.
CHN 048. Chinese Cinema. (4)
Lecture, two hours; discussion, one hour; screening, two hours; outside research, one hour. Prerequisite(s): none. Study of selected films from China and Taiwan with attention to cultural context. Questions addressed may include the following: What do we look for in a film? What are the film’s interrelationships with theatre, photography, and literature? How do we understand the film as an art form? Cross-listed with AST 048. Ye

CHN 090. Special Studies. (1-5)
Individual study, three to fifteen hours. To be taken with the consent of the Chair of the Department as means of meeting special curricular problems in either language or literature. Course is repeatable.

UPPER-DIVISION COURSES

CHN 101A-CHN 101B-CHN 101C.
Third-Year Chinese. (4-4-4)
Lecture, three hours; individual study, three hours. Prerequisite(s): CHN 006 for CHN 101A; CHN 101A for CHN 101B; CHN 101B for CHN 101C (or equivalent or consent of instructor for each course). A continuation of studies in the modern Chinese vernacular. Besides textbook readings, different styles of writing derived from newspaper columns, Marvel comics, and short stories are explored. Frequent exercises in English-Chinese translation and free composition.

CHN 104. Introduction to Classical Chinese Texts. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): CHN 003 or equivalent or consent of instructor. Introduction to classical Chinese philosophical and historical texts. Readings of primary source materials and analysis of grammar and usage. Class is conducted in English.

CHN 105. Classical Chinese Prose. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): CHN 006 or equivalent. Close reading of selected texts from the Han and pre-Han period, chosen to illustrate the main features of the Chinese Ku-wen (classical prose). Ye

CHN 107. Taoist Traditions. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): CHN 030 or CHN 030 or upper-division standing or consent of instructor. A survey of the ancient Chinese mystical and philosophical aspects of Taoism as well as the living religious tradition, their relationships to each other, and their expression in Chinese culture and civilization. Topics include the Tao Te Ching, the Chuang-tzu, the Taoist canon, meditation, immortality, alchemy and ritual. Cross-listed with AST 107. Raphals

CHN 108. Introduction to Classical Chinese Poetry. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): CHN 101C or equivalent or consent of instructor. Reading and explication of representative texts in various genres and forms, chosen to illustrate the development of classical Chinese poetry from its origin through the premodern age. Classes are conducted primarily in Chinese. Ye

CHN 110 (E-Z). Readings in Twentieth-Century Chinese Literature. (4)
Lecture, two hours; discussion, one hour; screening, two hours; extra reading, one hour. Prerequisite(s): CHN 101C or equivalent or consent of instructor. Representative works of major authors. Readings and discussions are conducted in Chinese. Contemporary Chinese Fiction; M. Modern Chinese Fiction; S. Modern Chinese Poetry; W. Modern Chinese Prose. Wu, Ye

CHN 115 (E-Z). Readings in Thirteenth- to Nineteenth-Century Chinese Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): CHN 101C or equivalent or consent of instructor. Vernacular literature from the Yuan to the Qing dynasties. Readings and discussions are conducted in Chinese. G. Honglou meng; M. Qing Novel; Q. Qing Novel; S. The Short Story; Y. Yuan Drama. Wu

CHN 130A-CHN 130B-CHN 130C.
Chinese Literature in Translation. (4-4-4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Knowledge of Chinese not required. Lectures and collateral reading of representative works in English and translation. 130A: Poetry, historical records, essays, drama, and fiction from Earliest Times to the Yuan Dynasty (1368 A.D.); 130B: Drama and fiction from the fourteenth century to the end of the Qing Dynasty (1911 A.D.); 130C: Twentieth-century poetry and fiction. Can be taken out of sequence. Cross-listed with AST 130A-AST 130B-AST 130C. Wu, Ye

CHN 135. Great Novels of China. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the social, philosophical, and aesthetic features in major Ming-Qing novels through critical reading and analysis of literature in translation. No knowledge of Chinese required. Cross-listed with AST 135. Wu

CHN 136. Family and Gender in the Chinese Short Story. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines a broad array of short stories from the Tang to the Qing dynasties (approximately ninth to eighteenth century). Investigates love, marriage, family, gender dynamics, and the representation of women in Chinese literature. No knowledge of Chinese required. Cross-listed with AST 136. Wu

CHN 142. Chuang-tzu. (4)
Lecture, one hour; discussion, two hours; outside research, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): CHN 101C or equivalent or consent of instructor. An examination of chaos, epistemological and linguistic relativity, fate, skill, and the character of the sage in perhaps the most significant of Chinese Taoist texts, the Chuang-tzu. Discussion of the structure and style of this literary masterpiece. Students with knowledge of classical Chinese may arrange additional work through special studies. Cross-listed with AST 142 and RLST 142. Nyitray

CHN 148. Chinese Poetry and Poetics in Translation. (4)
Lecture, two hours; discussion, one hour; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examination of traditional Chinese poetry through the study of selected major texts, emphasizing forms, themes, and Chinese poetics in its close relation to the development of Chinese literature. Classes are conducted in English. Cross-listed with AST 148. Ye

CHN 185. New Chinese Cinema. (4)
Lecture, two hours; discussion, one hour; screening, two hours; extra reading, one hour. Prerequisite(s): upper-division standing or consent of instructor. A study of representative films from the People’s Republic of China, with a focus on those made during the last decade. Conducted in English; films to be shown from videocassettes are mostly with English subtitles. Cross-listed with AST 185. Ye

CHN 190. Special Studies. (1-5)
Individual study, three to fifteen hours. Prerequisite(s): upper-division standing or consent of instructor. To be taken with the consent of the Chair of the Department as means of meeting special curricular problems in either language or literature. Course is repeatable.

CHN 195. Senior Thesis. (2-4)
Thesis, six to twelve hours. Prerequisite(s): senior standing; consent of instructor. Individual research and preparation of a thesis completed under the supervision of a faculty member. Course is repeatable to a maximum of 12 units.

JAPANESE

Subject abbreviation: JPN

The Japanese minor allows students to combine offerings from different fields and departments to pursue systematically the study of Japanese language and culture.

Attention is directed to the Education Abroad programs in Japan: centers are located in Kyoto, Osaka, Sendai, Tokyo, Tsukuba Science City, Tsuru City, and Yokohama. Contact International Services at (909) 787-4113.

Enroll in a concentrated beginning or intermediate study program at Pitzer University, located near Hiroshima. Students may earn a year's worth of university language credit in one month. Contact Karen Diamond at International Education Programs for further information: (909) 787-4346.

Minor

The minor in Japanese requires the completion of 24 units as follows:

1. JPN 101A, JPN 101B, JPN 101C (12 units)
2. Upper-division course work focusing primarily on Japan and its culture (6 units)

Courses that meet this requirement include the following. Other appropriate courses may be counted with the advisor's consent.

AST 151/JPN 151
AST 152 (E-Z)/JPN 152 (E-Z)
AST 184/CPLT 184/JPN 184/FVC 184
JPN 190
AST 190
AHS 144/AST 144
AHS 146/AST 147
MUS 169/AST 169
RLST 105
3. Additional upper-division course work (4 units)

This work may deal with Japan alone, and can be chosen from the list above. Alternatively, the student may, in consultation with the advisor, choose a course that treats Japan in connection with other cultures such as China, America, or Southeast Asia. The courses below have included significant Japan-related content in past years; these or other appropriate courses may be counted toward this requirement with the advisor’s approval.

ALT 121/AST 121
ALT 131/AST 131
CPIT 141
ENGL 139
ETST 138, ETST 140, ETST 150
MUS 124/AST 124
MUS 128/ANTH 128/AST 128/DNCE 128/TEA 176
RLST 106
RLST 144/CPIT 144

Students may also wish investigate other courses in these departments, as well as courses in Anthropology, Economics, Sociology, World Literature, and other areas.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

LOWER-DIVISION COURSES

JPN 001-JPN 002-JPN 003, First-Year Japanese, (4-4-4)
Lecture, four hours. Prerequisite(s): none for JPN 001, JPN 001 or equivalent for JPN 002, JPN 002 or equivalent for JPN 003. An introduction to the sound system and grammar of Japanese with emphasis on speaking, reading, writing, and understanding. Classes conducted in Japanese insofar as possible.

JPN 004-JPN 005-JPN 006, Second-Year Japanese, (4-4-4)
Lecture, four hours. Prerequisite(s): JPN 003 or equivalent for JPN 004, JPN 004 or equivalent for JPN 005, JPN 005 or equivalent for JPN 006. 004: Introduces levels of speech and emphasizes reading and writing of advanced prose. 005: Concentrates on advanced speech levels and their cultural underpinnings. 006: Emphasizes the academic style of written and spoken Japanese and academic comprehensions of the cultural background.

JPN 034, Early Japanese Civilization, (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): none. An introduction to Japanese civilization from earliest times to the dawn of the twentieth century. Devotes particular attention to aesthetic activity and to the relationship between history, culture, and the arts. Cross-listed with AST 034.

JPN 035, Modern Japanese Society, (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to Japanese culture and society with emphasis on the day-to-day lives of the modern Japanese people at home, work, and play. Cross-listed with AST 035.

JPN 090, Special Studies, (1-5)
Individual study, three to fifteen hours. To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems in either language or literature. Course is repeatable.

UPPER-DIVISION COURSES

JPN 101A, Third-Year Japanese, (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): JPN 006. Designed to develop students’ reading, writing, and speaking abilities in Japanese. The course is conducted in Japanese.

JPN 101B, Third-Year Japanese, (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): JPN 101A. Designed to develop students’ reading, writing, and speaking abilities in Japanese. The course is conducted in Japanese.

JPN 101C, Third-Year Japanese, (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): JPN 101B. Designed to develop students’ reading, writing, and speaking abilities in Japanese. The course is conducted in Japanese.

JPN 142, Modern Japanese Literature, (4)
Lecture, four hours. Prerequisite(s): upper-division standing or consent of instructor. The course covers major works of modern and contemporary Japanese literature in translation. Bolton

JPN 150, In Women’s Hands: Reading Japanese Women Writers, (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines major works of Japanese women writers from Heian (ninth century) to contemporary, focusing on themes, genres, representations of gender, ideas of love and romance, and feminine aesthetics. Readings include fiction, poetry essays, and drama, with the main emphasis on fictional writing. Classes are conducted in English. Cross-listed with AST 150.

JPN 151, Early Japanese Literature, (4)
Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. An in-depth introduction to early Japanese literature. Focuses on fiction, from early poem tales and court romances to warrior tales and stories of the floating world. Careful attention is given to the works’ historical and cultural backgrounds and visual and artistic dimensions. All works are read in English translation. Cross-listed with AST 151.

JPN 152 (E-Z), Themes in Modern Japanese Literature, (4)
Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to modern Japanese literature in translation, as seen through the lens of a particular theme or issue. All materials read or viewed in English. E. The End of the World in Japanese Literature; F. The Mask in Japanese Fiction; G. Love and Death. Cross-listed with AST 152 (E-Z). Bolton

JPN 184, Japanese Film and Visual Culture, (4)
Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates popular visual culture in Japan primarily through film, from the early masters to contemporary directors. Additional material may be drawn from fields such as theatre, television, visual art, architecture, and illustrated fiction. All materials read or viewed in English. Course is repeatable to a maximum of 12 units. Cross-listed with AST 184, CPIT 184, and PVC 184. Bolton

JPN 190, Special Studies, (1-5)
Individual study, three to fifteen hours. Prerequisite(s): upper-division standing or consent of instructor. To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems in either language or literature. Course is repeatable.

KOREAN

Subject abbreviation: KOR

LOWER-DIVISION COURSES

KOR 001-KOR 002-KOR 003, First-Year Korean, (4-4-4)
Lecture, four hours. Prerequisite(s): for KOR 001, none; for KOR 002, KOR 001; for KOR 003, KOR 002. An introduction to the sound system and grammar of Korean with emphasis on reading, writing, understanding, and speaking.

KOR 004-KOR 005-KOR 006, Second-Year Korean, (4-4-4)
Lecture, four hours. Prerequisite(s): for KOR 004, KOR 003 or equivalent or consent of instructor; for KOR 005: KOR 004 or KOR 025 or consent of instructor. Emphasizes reading, writing, grammar, and conversation. KOR 005 is conducted primarily in Korean.

KOR 025, Conversation and Composition, (4)
Lecture, four hours. Prerequisite(s): KOR 003 or equivalent. Practice at the intermediate level in speaking and writing Korean. Regular discussion and oral presentation of assigned written topics. Provides a review of basic grammar with the goal of achieving oral and written command.

CIVILIZATION

The Civilization concentration is available in the areas on French, German, and Russian Studies. See specific requirements under each respective section.

LOWER-DIVISION COURSES

EUR 025, Introduction to European Culture, (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. A study of major characteristics of Western culture and the influence of Western ideas and institutions throughout the world. Emphasis on the ways in which society, economy, ideas, and technology interact to produce change. Audio-visual presentations demon-
strate European forms in the arts, private life, and urban and rural environments. All work is done in English.

EUR 030 (E-Z). Themes in French Civilization. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): none. Examines major aspects of French and Francophone cultures, studied through art history, history, literature, and ethnography. F: France and America, W: The Frenchwoman. No knowledge of French is necessary.

EUR 047. Introduction to Russian Culture. (4)
Lecture, three hours; consultation, one hour. A multi-media introduction to Russian culture. Emphasis on Russian masterpieces in art, architecture, dance, theatre, literature, film, and music which are characteristic of the culture and life of their period. All work is done in English. Strongly recommended for Russian majors.

UPPER-DIVISION COURSES

EUR 111A-EUR 111B-EUR 111C-EUR 111D. Survey of Russian Civilization. (4-4-4-4)
Lecture, three hours; consultation, one hour. EUR 111A: Pre-Twentieth Century Russian Music, Architecture and Art; EUR 111B: Russian Philosophy, Religion, and Science; EUR 111C: Russian Symbolism and the Great Emigration; EUR 111D: Soviet Culture. Any course within this sequence may be taken independently. No knowledge of Russian is necessary.

EUR 112A-EUR 112B-EUR 112C-EUR 112D. Survey of Germanic Cultures and Institutions. (4-4-4-4)
Lecture, three hours; outside reading, three hours. Prerequisite(s): none. EUR 112A: Early Period, Middle Ages, Reformation to 1520; EUR 112B: Humanism, Baroque, Enlightenment to 1750; EUR 112C: German Civilization, 1750 to 1880; EUR 112D: German Civilization, 1880 to present. Each segment may be taken separately. No knowledge of German is required. Shapiro

EUR 113 (E-Z). Special Topics in Russian Civilization. (4-4-4-4)
Lecture, three hours; consultation, one hour. Prerequisite(s): upper-division standing or consent of instructor. An in-depth study of selected topics dealing with Russian cultural phenomena, for example, medieval Russian civilization and Moscow versus St. Petersburg; Leningrad as representatives of two opposing cultural and philosophical worlds. No knowledge of Russian is necessary. F: Russian Folklore.

EUR 114A-EUR 114B-EUR 114C. French Civilization. (4-4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Each course may be taken independently of the others. Interdisciplinary study of major aspects of French culture from ancient times to the First World War. EUR 114A: Middle Ages; EUR 114B: Renaissance and Ancient (accent mark over first “e”) Regime; EUR 114C: French Revolution to the Belle Epoque. No knowledge of French is necessary. Shapiro

EUR 115 (E-Z). French Studies. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Varying topics relating to the literature, thought, and culture of France. Possible topics might include: the Paris mythique, French literary existentialism, individualism in the Renaissance. F: Paris; M: Medieval Women in France. No knowledge of French is necessary.

EUR 116A-EUR 116B. Modern and Contemporary France. (4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Each course may be taken independently of the other. Interdisciplinary study of French society, culture, politics, and institutions from the First World War to the present. EUR 116A: 1914-1938; EUR 116B: Contemporary France, 1956-Present. No knowledge of French is necessary. Shapiro

EUR 117A-EUR 117B-EUR 117C. Survey of Spanish Culture and Civilization. (4-4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): HIST 101A or HIST 101B or EUR 025 or equivalent or consent of instructor. EUR 117A: From pre-Columbian times to the 10th century; EUR 117B: Reconquest and Golden Age; EUR 117C: From 1700 to the present. Each segment may be taken separately. No knowledge of Spanish necessary. Credit is awarded for only one of EUR 117A-EUR 117B-EUR 117C or SPN 102A.

LNST 118A-LNST 118B. Survey of Latin American Culture and Civilization. (4-4)
Lecture, three hours; read and consult, one hour. EUR 118A: from pre-Columbian period to independence; EUR 118B: modern period. No knowledge of Spanish necessary. Credit is awarded for only one of LNST 118A-LNST 118B or SPN 102B.

EUR 119 (E-Z). Topics in Italian Culture. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. In-depth study of major topics in Italian institutions, society, and culture. E: Contemporary Italy. M: Making of Italian Arts; R: Risorgimento: Birth of the Italian Nation; U: Italian Urban Culture. No knowledge of Italian is required.

EUR 191. Seminar in European Civilization. (4)
Seminar; three hours; consultation, one hour. Discussion and research on a selected theme related to European civilizations. Advanced methodological training and comparative approaches will be emphasized. Topics may include urban and/or rural life, the family, women, education, cultural creativity. Course may be repeated for credit up to 12 units.

CLASSICAL STUDIES

The objective of the major in Classical Studies is the furthering of knowledge of classical civilization through two emphases: (1) the study of Greek and/or Latin language(s) and literature(s) and (2) the study of courses in English translation on topics including classical literature, history, politics, religion, mythology, and art in order to aid students’ appreciation of the Greek and Roman contributions to later Western civilization.

The student who majors in Classical Studies acquires a balanced yet focused view of the language, literature, thought, and civilization of Greece and Rome. The student also obtains the valuable skills of a better vocabulary, a sharper critical sense, logical analysis of texts, coherent argumentation, and a valuable perspective on our own society. Classical Studies majors receive a liberal arts education of traditional excellence and one widely esteemed by business and professional schools. A major may also pursue graduate training in Classics, Art History, History, Philosophy, or other related disciplines.

Major

Language Proficiency. All students in Classical Studies must complete either LATN 001, LATN 002, LATN 003, and LATN 004 (or equivalents) or GRK 001, GRK 002, and GRK 003 (or equivalents). They must also complete 12 upper-division units (or the equivalent) of course work in Latin or Greek.

1. Language proficiency requirement:
   a) either LATN 001, LATN 002, LATN 003, and LATN 004 (or equivalents) or GRK 001, GRK 002, and GRK 003 (or equivalents)
   b) Twelve (12) upper-division units or the equivalent of course work in Latin or Greek

2. Civilization requirement
   Either two courses from CLA 010A-CLA 010B-CLA 010C or both of CLA 027A-CLA 027B

3. WRIT 015

4. Twenty-four (24) units from the following:
   a) Upper-division Latin or Greek literature courses beyond the language proficiency requirement
   b) AHS 147, AHS 148, CLA 100/HISE 110, CLA 110 (E-Z)/LATN 110 (E-Z), CLA 112/WRIT 112/RLST 117, CLA 114/WRIT 114, CLA 165, CLA 190, GRK 190, HIST 107, LATN 190, PHIL 121Q, POSC 110, RLST 136, THA 125E
   c) Other courses outside the Classics program related to the major with approval of the student’s advisor.

Related lower-division courses which are highly recommended are as follows:
CLA 022/PED 022 (Greek and Roman Athletics); CLA 040 (Classical Mythology). In their course selection, students should seek exposure to both the Greek and Roman components of the major.

Foreign Language Placement Examination. A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly Schedule of Classes for date and time. Transfer students who have taken a college-level language course should
consult with their advisors. No college-level credit may be duplicated.

**Minor**

The Classical Studies minor offers students a fundamental understanding of classical language and culture which form the basis of much of western civilization. The minor naturally complements liberal arts degrees in many areas, including History, Art History, Philosophy, English, and Religious Studies. Students profit from the skills associated with a degree in the classics, such as enhancement of analytical and critical abilities, communication skills, and verbal proficiency.

1. One course from CLA 010A-CLA 010B-CLA 010C or CLA 027A-CLA 027B
2. Either LATN 001-LATN 002-LATN 003-LATN 004 or the equivalent or GRK 001-GRK 002-GRK 003
3. One upper-division course (4 units) in either Latin or Greek
4. Three courses from among the following (12 units)
   a) Greek at or above the 100 level
   b) Latin at or above the 100 level
   c) AHS 147, AHS 148, CLA 100/HISE 110, CLA 110-EZ/LATN 110-EZ, CLA 129/WRIT 112/RIST 117, CLA 124/WRIT 114, CLA 165, CLA 190, GRK 190, HIST 107, LATN 190, PHIL 121Q, POSC 110, RSTL 136, THEA 125

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

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**CLASSICS**

**LOWER-DIVISION COURSES**

**CLA 010A-CLA 010B-CLA 010C. Ancient Civilization. (4-4-4)**

Lecture, three hours; term paper, three hours. Prerequisite(s): none. A broad treatment of history, art and archaeology, and literature, read in translation, comprising a cultural survey of the origins and the first formation of Western civilization. 010A: Early Greece and the Mediterranean; 010B: Classical Greece; 010C: Rome. Raschke

**CLA 020. Word Power from Greek and Latin Roots. (4)**

Lecture, three hours; consultation, one hour. An intensive study of Greek and Latin elements in English etymology and word derivation. No knowledge of Greek or Latin is necessary. King, Scanlon

**CLA 022. Greek and Roman Athletics. (4)**

Lecture, three hours; consultation, one hour. A study of ancient Greek and Roman athletics and their connections with religion, politics, literature, and art. Primary sources in translation. Cross-listed with PED 022. Scanlon

**CLA 027A-CLA 027B. Classical Literature in Translation. (4-4)**

Lecture, three hours; consultation, one hour. Selected readings in Greco-Roman epic, drama, lyric, history and philosophy. 027A: Love and Death; 027B: Illusion and Reality. Griffin, Scanlon, Raschke

**CLA 030. Scientific Word Power from Latin and Greek Roots. (4)**

Lecture, three hours; extra reading, three hours. Prerequisite(s): none. A systematic analysis of the scientific terminology in English derived from Greek and Latin stems, including those in the biological and natural sciences. Aims are to teach word-analysis, to increase technical and taxonomic vocabulary and to study our linguistic and cultural debt to Greek and Roman scientific language. Scanlon

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**UPPER-DIVISION COURSES**

**CLA 100. Ancient Historians. (4)**

Lecture, three hours; outside research, two hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. The historical development of historiography as evidenced in ancient historical writings from Near Eastern king lists and biblical histories to the narrative histories of Greece and Rome. Focuses on the ideas of history in the various cultures of the ancient Near East and Mediterranean and their relation to modern historical thought. Cross-listed with HISE 110.

**CLA 110 (E-Z). Latin Literary Genres. (4)**

Lecture, three hours; term paper, three hours. Prerequisite(s): none. An introductory survey of the ancient Latin literary genres. Includes reading of primary ancient texts and modern scholarship. This course may meet certain college or major language requirements for those students who choose, with instructor’s permission, to select readings in Latin. E. Drama. J. Historical Literature. Cross-listed with LATN 110 (E-Z). Scanlon, Raschke

**CLA 112. Mythology. (4)**

Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative study of mythic traditions from several world cultures and religions viewed from a variety of theoretical perspectives. Includes material drawn from epics, religious texts, divine hymns, creation myths, heroic legends, and concepts of the afterlife as reflected in literary and nonliterary sources. Cross-listed with RSTL 117 and WRIT 112.

**CLA 114. The Classical Tradition. (4)**

Lecture, three hours, extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of the legacy of Greece and Rome in Western Culture, from the Renaissance to the present. Topics include literature, art, architecture, and politics. Cross-listed with WRT 114. Scanlon

**CLA 120 (E-Z). Themes and Issues of the Classical World. (4)**

Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Focuses on an aspect of antiquity of critical importance to modern culture, and examines the relevant literary texts, artistic monuments, and cultural data. Students explore and interpret ancient sources to gain an appreciation of the differences and similarities between the classical world and the world today. All readings in English; no knowledge of foreign languages required. E. Ancient Sexuality and Gender: Myths and Realities.

**CLA 165. Greco-Roman Cults and Credence. (4)**

Lecture, three hours, term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the rich diversity of religious belief and systems of worship in the Greco-Roman world, from Bronze Age and Classical Greeks, to the Romans of the late Empire. Texts, documents, and archaeological evidence are examined to explore these unique constructions of ritual and creed. Scanlon

**CLA 190. Special Studies. (1-5)**

To be taken with the consent of the chairperson of the department as a means of meeting special curricular problems or deficiencies. Course is repeatable.

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**GRADUATE COURSE**

**CPLT 290H. Directed Studies in Classical Literature. (1-6, 1-5)**

Description under Comparative Literature. 290H: Greek; 290L: Latin.

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**PROFESSIONAL COURSE**

**CLA 302. Teaching Practicum. (1-4)**

Practicum, four to eight hours; discussion, one hour. Prerequisite(s): CPLT 301 or equivalent; graduate standing; employment as teaching assistant or associate-in. Supervised teaching in lower-division courses. Required of all teaching assistants in Classics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

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**GREEK**

**LOWER-DIVISION COURSE**

**GRK 001-GRK 002-GRK 003. Introduction to Classical Greek. (4-4-4)**

Lecture, four hours. Intensive study of the fundamentals of Attic-Creek with practice in reading and writing. King
GRK 101. Advanced Greek Reading and Grammar. (4)
Lecture, three hours; extra reading, three hours.

GRK 190. Special Studies. (1-5)
To be taken with the consent of the instructor as a means of meeting special curricular problems. Course is repeatable.

LATN 001-LATN 002-LATN 003. Introduction to Latin. (4-4-4)
Lecture, four hours. Intensive study of the fundamentals of the Latin language with practice in reading and writing.

LATN 004. Intermediate Latin. (4)
Lecture, three hours; three weekly grammar study projects. Prerequisite(s): LATN 003 or equivalent. Readings from Latin prose and poetry, accompanied by selective review of grammar and presentation of more advanced grammatical issues. Designed to complete the introductory sequence and to ease the transition to upper-division literature courses. Raschke

LATN 101 (E-Z). Advanced Latin Reading and Grammar. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): LATN 004 or equivalent. One or two of the following are offered every year according to need: E. Plautus; F. Terence; G. Virgil; H. Catullus; I. Horace; J. Ovid; K. Propertius; L. Tibullus; M. Sallust; N. Coceor; O. Livy; P. Tacitus; Q. Juvenal; R. Lucretius; S. Seneca; T. Pliny; U. Medieval Latin; V. Renaissance Latin.

LATN 110 (E-Z). Latin Literary Genres. (4)
Lecture, three hours; term paper, three hours.
Prerequisite(s): upper-division standing or consent of instructor. Readings and discussion of the principal genres of Classical Latin literature. Attention is given to contemporary ancient critical theory, and its divergence from modern literary constructs. Includes analysis of primary ancient texts and modern scholarship. This course may meet certain college or major language requirements for those students who choose with instructor's permission to do select readings in Latin. E. Drama; F. Historical Literature. Cross-listed with CLA 110 (E-Z).

LATN 125. The Roman Novel. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): LATN 004 or equivalent. Reading and discussion of Latin prose fiction as represented by Petronius' Satyricon and/or Apuleius' Metamorphoses. Emphasis given to the development of the romantic novel in Latin. Raschke

LATN 190. Special Studies. (1-5)
Individual study, three to fifteen hours. Prerequisite(s): LATN 004 or equivalent or consent of instructor. To be taken with the consent of the instructor as a means of meeting special curricular problems. Course is repeatable. Scanlon

LTLG 301. Teaching of Foreign Language at the College Level. (4)
Description under Literature and Languages.

CPLT 290H. Directed Studies. (1-6)
Description under Comparative Literature. 290H: Greek.

CPLT 290L. Directed Studies. (1-6)
Description under Comparative Literature. 290L: Latin.

The Comparative Ancient Civilizations major combines the breadth of an interdisciplinary major with the focus of more traditional majors like History or Classical Civilization. By undertaking a comparison of several major cultures of the past which have a continued importance in the construction of our present world, the program affords a truly liberal education. Students will have a unique opportunity to employ the methods of humanities and social sciences in their major study. Majors will acquire skills of historical and social analysis, multicultural awareness, insight into constructions of gender and sexuality, and mental flexibility.

The major is an excellent choice as a double major taken along with any of the traditional disciplines to add distinction and intellectual breadth to one's background.

The career opportunities for majors in this area are the same as those of any high quality liberal arts degree which imparts the skills of communication and analysis: graduate studies in History, Art History, Philosophy, Classics, Religious Studies, Political Studies, Comparative Literature, Anthropology, Gender and Women's Studies, and other humanities and social sciences; professional schools in law or business; careers in areas of international consultancy, travel, communications, museums, etc. Career options may of course depend on the individual focus and emphasis within the major course in related disciplines. One consistent advisor for the major will be appointed from the Comparative Ancient Civilizations faculty to consult closely with each student and to devise an individual curriculum which best fits the student's interest and career goals.

**Major**

1. Lower-division requirements (8 units)
   a) CPAC 001 and CPAC 002

2. Upper-division requirements (44 units)
   a) Four (4) units of CPAC 101 (E-Z)
   b) Forty (40) units including:
      (1) At least 12 units from any of CPAC 110 (E-Z), CPAC 120 (E-Z), CPAC 130 (E-Z), CPAC 140 (E-Z)
      (2) The balance from any of the following upper-division courses in related disciplines; students are
recommended, in consultation with their advisor, to focus on one or two ancient civilizations in related courses in order to obtain special depth in those areas. Since related course offerings in these areas are often added, some of the most recent courses acceptable to fulfill this requirement may not be listed and students are advised to consult with the major advisor.

**Anthropology**
- ANTH 102/AHS 102 (Anthropology of Art)
- ANTH 110 (Prehistoric Agriculture)
- ANTH 117A (History of Old World Archaeology)
- ANTH 117B (History of New World Archaeology)
- ANTH 162 (Culture and Medicine)
- ANTH 171 (Field Course in Maya Archaeology)

**Art History**
- AHS 102/ANTH 102 (Anthropology of Art)
- AHS 139/AST 139 (Early Chinese Art)
- AHS 144/AST 144 (Japanese Painting: Twelfth to Nineteenth Centuries)
- AHS 146/AST 147 (The Japanese House)
- AHS 147 (The Art of Greece)
- AHS 148 (The Art of Rome)
- AHS 153 (Art and Myth in Ancient Rome)
- AHS 155 (Early Christian Art)

**Asian Literature**
- ALT 121/AST 121 (Masterworks of East Asian Literature)
- ALT 131/AST 131 (Women in Asian Literature)

**Asian Studies**
- AST 121/ALT 121
- AST 131/ALT 131
- AST 136/CHN 136 (Family and Gender in the Chinese Short Story)
- AST 139/AST 139
- AST 142/CHN 142/RLST 142 (Chuang-tzu)
- AST 144/AHS 144
- AST 147/AHS 146
- AST 148/CHN 148 (Chinese Poetry and Poetics in Translation)

**Chinese**
- CHN 142/AST 142/RLST 142
- CHN 148/AST 148

**Classics**
- CLA 100/HISE 110 (Ancient Historians)
- CLA 110 (E-Z)/LATN 110 (E-Z) (Latin Literary Genres)
- CLA 112/RLST 117/WRLT 112 (Mythology)
- CLA 114/WRLT 114 (The Classical Tradition)
- CLA 120 (Themes and Issues of the Classical World)
- CLA 165 (Greco-Roman Cult and Credence)

**English**
- ENGL 100 (Scriptures, Myth, and Interpretation)
- ENGL 149 (Old English Literature)
- ENGL 151A-ENGL 151B (Middle English Literature)

**Ethnic Studies**
- ETST 115 (E-Z)/HISA 144 (E-Z) (Special Topics in American Indian History)

**European Culture**
- EUR 112A (Survey of Germanic Cultures and Institutions: Early Period, Middle Ages, Reformation to 1520)
- EUR 117A (Survey of Spanish Culture and Civilization)

**Greek**
- GRK 101 (E-Z) (Advanced Greek Reading and Grammar)

**History**
- HIST 103 (History of Science from Antiquity to Copernicus)
- HISE 110/CLA 100 (Ancient Historians)
- HISE 115 (The Roman Republic)
- HISE 116 (The Roman Empire)
- HISE 117 (Decline and Fall of the Roman Empire)
- HISE 130/RLST 135 (History of Christianity)
- HISA 144 (E-Z)/ETST 115 (E-Z) (Topics in Native American History)
- HISE 150 (Ancient and Medieval England)
- HISE 171 (Early Russia)
- HIST 180 (Early Traditional China)
- HIST 181 (Late Traditional China)

**Japanese**
- JPN 151/AST 151 (Early Japanese Literature)

**Latin**
- LATN 101 (Advanced Latin Reading and Grammar)
- LATN 110 (E-Z)/CLA 110 (E-Z)
- LATN 135 (The Roman Novel)

**Latin American Studies**
- LNST 118A (Survey of Latin American Culture and Civilization)

**Philosophy**
- PHIL 121Q (Topics in the History of Philosophy: Ancient Philosophy)

**Political Science**
- POSC 110 (The Origins of Our Political Ideas)

**Religious Studies**
- RLST 101 (Religions of India)
- RLST 103 (Religions of China)
- RLST 105 (Religions of Japan)
- RLST 106 (Buddhism)
- RLST 117/CLA 112/WRLT 112
- RLST 124E (Early Judaism)
- RLST 124I (The Talmudic Period)
- RLST 128E (Contemporary Views of Jesus)
- RLST 130 (Bible: New Testament)
- RLST 131 (Jesus)
- RLST 135 (History of Christianity)
- RLST 136 (Augustine and Aquinas)
- RLST 142/AST 142/CHN 142

**Sociology**
- SOC 123 (Human Societies)

**World Literature**
- WRLT 112/CLA 112/RLST 117
- WRLT 114/CLA 114

**LOWER-DIVISION COURSES**

**CPAC 003. Comparative Ancient Civilizations: An Introduction. (4)**
Lecture, three hours; outside research, three hours.
Prerequisite(s): none. An introduction to the comparative study of ancient civilizations of the world, their origins and development, some of the common traits and themes of world civilizations, and some of the unique qualities of particular cultures. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

Lecture, three hours; outside research, three hours.
Prerequisite(s): none. Asks how people conceptualize ancient civilization and make claims to it as a source of their cultural heritage. By examining a number of exemplary cases, explores ways in which the idea of an ancient civilization in either the East or the West, the "Old World" and the "New," is constructed, assimilated, and appropriated by later times and other cultures inter alia for political empowerment and cultural legitimation. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

**UPPER-DIVISION COURSES**

**CPAC 101 (E-Z). Ancient Civilizations and Later Identities. (4)**
Lecture, three hours; outside research, three hours.
Prerequisite(s): upper-division standing or consent of instructor. Exploration of the ways in which perceptions and representations of ancient civilizations are used as the foundational sources for the construction of later racial, ethnic, religious, and nationalistic identities. E. The Concept of the Aryans. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences, for breadth requirement information.
CPAC 110 (E-Z). Comparative Ancient Arts and Ideology. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Compares the relationships between the arts and their ideological assumptions and purposes in selected ancient civilizations. Also examines their cultural contexts and processes of historical transformation. Considers the "arts" in both the ancient sense of "skill" or "craft," and the modern ones of "liberal" and "fine" arts. E Canon and Commentary in the Ancient World. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

CPAC 120 (E-Z). Comparative Ancient Social, Economic, and Political Organization. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Investigations of the social, economic, and political organizations of ancient civilizations from a comparative perspective. E Monarchy. Fills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

CPAC 130 (E-Z). Comparative Ancient Science, Technology, and Material Culture. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the important dynamics of cultural nature, the body, and systematic accounts of the natural world. Includes ideas about the "arts" in both the ancient sense of "skill" or "craft," and the modern ones of "liberal" and "fine" arts. E Canon and Commentary in the Ancient World. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

CPAC 131. Readings in the Origins of Science in China and Greece. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Seminar of the origins of science in China and Greece, both in their own terms and by comparison to modern scientific categories. Includes ideas about the "arts" in both the ancient sense of "skill" or "craft," and the modern ones of "liberal" and "fine" arts. E Canon and Commentary in the Ancient World. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

CPAC 140 (E-Z). Contact, Conflict, and War in Ancient Civilizations. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the important dynamics of cultural pluralism, both internal and external to given civilizations, and the ways in which both productive and destructive interactions can result. Topics such as assimilation, exploitation, migration, colonization, foreign and domestic military conflict, factionalism, relations of cultural majorities and minorities, gender roles, and social stability and instability may be examined. E Militarism and Hegemony. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

COMPARATIVE AND WORLD LITERATURE

Comparative Literature is an interdisciplinary field which is studied internationally. Thus, it draws on an array of methodologies and perspectives. At UCR, the Comparative Literature curriculum is organized around a core staff of comparatists assisted by qualified faculty from other departments and programs. The discipline of Comparative Literature encourages study of interliterary relationships among various cultural traditions; on the graduate level, it seeks to promote the study of interdisciplinary relationships. Comparative Literature courses, undergraduate or graduate, require that the majors read whenever possible in the languages (two for undergraduates, one of which may be English, and three for graduates) they present. Non-majors may do all the readings in English translations.

World Literature readings are always done in English translations. Comparative Literature majors may also work with translations. There is no major in World Literature; its courses are characterized by breadth. Comparative Literature and World Literature courses are open to all students.

Comparative Literature Major

1. Lower-division requirements (16 units plus proficiency)
   a) Proficiency in at least one foreign language, ancient or modern, through the intermediate level (second year)
   b) WRLT 015
   c) WRLT 017A-WRLT 017B-WRLT 017C

2. Upper-division requirements (56 units)
   a) Twenty (20) units in one literature, distributed as much as possible among courses representing the various literary periods
   b) Twelve (12) units in a second literature
   c) WRLT 110
   d) Twenty (20) units in Comparative Literature and World Literature

Students contemplating graduate study in Comparative Literature are urged to complete two years in a third (or second foreign) language before graduation. Undergraduate units taken on the S/NC basis may not be applied toward the minimum unit requirement for the B.A. degree, unless such units are taken outside Comparative Literature and a student’s first and second literatures.

GRADUATE PROGRAMS

All applicants to these graduate programs must supply General Test scores for the Graduate Record Examination (verbal, quantitative, analytical).

Master’s Degree

Students may be admitted to the program if they meet the general requirements for admission to graduate status as set forth in the Graduate Studies section of this catalog; if they have satisfactorily completed an undergraduate literature major, or its equivalent, in one of the three fields in which they plan to work; if they have completed some upper-division work in a second literature; and if they are sufficiently prepared linguistically to complete an upper-division or graduate level course in a third literature. Students whose undergraduate preparation is inadequate will be required to take additional units of work beyond the minimum stated below.

There are two plans for the M.A. degree in Comparative Literature: Plan I, the thesis option; and Plan II, the comprehensive exam option. Candidates for both plans will be expected to work in three of the following literatures: Chinese, English, French, German, Greek, Italian, Latin, Japanese, Portuguese, Russian, and Spanish.

Plan I (Thesis)

Requirements are as follows:

1. Eight (8) units in masterworks of world literature (CPLT 217A and CPLT 217B);
2. Eight (8) units in method and theory courses (CPLT 214 and CPLT 215A);
3. Eight (8) units in theory and practice of translation (CPLT 223, may be repeated for credit);
4. Eight (8) graduate units in the first literature; and 4 graduate units each in the second and third literatures (the 8 first literature units will be CPLT 290 workshops in translation, 4 from English into a chosen foreign language, and 4 from a chosen foreign language into English);
5. Four (4) elective units in Comparative Literature.

Students in Plan I may petition the Department to substitute a Master’s Thesis for the Comprehensive Examinations. The Translation Plan will be accompanied by a Certificate in Translation.

Plan II (Comprehensive Examination)

Requirements are as follows:

1. Eight (8) units in masterworks of world literature (CPLT 217A and CPLT 217B)
2. Eight (8) units in method and theory courses (CPLT 214 and CPLT 215A)
3. Eight (8) graduate units in a first literature (if the first literature is English, only 4 units may be taken in the English Department; 4 graduate units in a second literature; 4 graduate units in a third literature
4. Twelve (12) elective graduate units in comparative literature (graduate credit, by consent of instructor, may be given for upper-division Comparative Literature courses when these are taken through a combination of CPLT 290/CPLT 292 courses, directed studies, and concurrent enrollment)

After completing their course work candidates must pass a comprehensive examination. The examination will be based upon a reading list, which will include works from each of the major historical periods in one literature (the major specialty), and from one period or genre in each of the other two literatures (the comparative specialty). The list will be prepared by appropriate members of the faculty in consultation with the candidate. An oral examination follows the written.

**Doctoral Degree**

Two tracks are available to students in the Ph.D. program in Comparative Literature: Interdisciplinary Studies, and Interdisciplinary Studies/Cross-Cultural Studies. Areas of particular strength in the Interdisciplinary/ Cross-Cultural Studies are: East-West comparative studies; science fiction and the intersection of science with the humanities; and film and visual studies.

**Interliterary.** This program is designed for students wishing to concentrate in Comparative Literature as an interliterary discipline. Students examine the relationships among various national literatures. They are expected to work in three of the following literatures: Chinese, English, French, German, Greek, Italian, Latin, Japanese, Portuguese, Russian, and Spanish. With approval of the program, permission will be granted in exceptional cases to work in other literatures related to the Germanic, Romance, or Slavic families, in Hebrew literature, in other Asian literatures, and the literatures of Africa.

Students must obtain an in-depth knowledge of their first literature (the major specialty), historically, philosophically, and critically. In their two other literatures, they will specialize in a genre, a period, critical school or theoretical approach, always in combination with their main literature. Work in the three literatures must be done in the languages of these literatures.

Students entering the interliterary Ph.D. program with a M.A. in literature must take CPLT 217A and CPLT 217B, CPLT 214, and CPLT 215A (or demonstrate having taken similar courses). Course requirements are: two graduate courses in a first literature (8 units), one graduate course in a second literature (4 units), one graduate course in a third literature (4 units), and 12 additional elective units.

Students entering the interliterary Ph.D. program with a M.A. in another discipline will be required to do course work equivalent to the M.A. degree in Comparative Literature while proceeding with course work for the Ph.D. program.

**Interdisciplinary/Cross-Cultural Studies.** This program is designed for students with interests in interdisciplinary or cross-cultural studies. Students examine relationships between literature and other disciplines (such as art, ethnic studies, film, history, law, music, philosophy, political science, psychology, religious studies, science, sociology, theater), or pursue cross-cultural studies (such as East-West, Judaic, or Third World Studies). Students in this program complete the literary requirements of the program, but substitute an appropriate discipline for one of the secondary literatures. This option is recommended to students who enter Comparative Literature with an M.A. in a non-literary discipline.

Students entering the interdisciplinary/cross-cultural studies Ph.D. program with an M.A. in any discipline must take CPLT 217A and CPLT 217B, CPLT 214, and CPLT 215A. In addition, course requirements are: one graduate course in each of two literatures (8 units); 8 units in another discipline or area of cross-cultural studies; CPLT 286 (for interdisciplinary specialties) or CPLT 276 (for cross-cultural specialties); and 8 elective units. The graduate advisor may require appropriate courses on an individual basis.

Whatever the combination of literatures, or literatures and interdisciplinary field, students will be required to study a number of masterworks of world literature to be determined in consultation with the graduate advisor and other faculty. Translations may be used for works in literatures outside the student's specialties.

The Comparative Literature program offers, in conjunction with the Center for Bibliographic Studies, an interdisciplinary option in Science Fiction and Fantasy Studies, which allows students to make use of the large body of primary research materials in the Eaton Collection housed on the UCR campus.

Normally some teaching experience is required for the Ph.D. in Comparative Literature; such experience is obtained through a teaching assistantship whereby a student is assigned either to Comparative or World Literature or to another program.

The written qualifying examination for the Ph.D. in Comparative Literature will consist of the following sections:

1. Examinations in the field of the candidate's major specialty (historical, philological, and critical), including a comparative perspective. There is a Specific Reading List drawn up by the student in consultation with his or her committee, reflecting the comparative specialty. This list will be in addition to the Basic Reading List in the national literature.

2. Examinations in the field of the candidate's comparative specialty, interliterary or interdisciplinary, based on reading lists drawn up specially for the candidate by designated members of the committee.

The written examinations are followed by an oral qualifying examination. Candidates for the Ph.D. are required to write a dissertation on a topic approved by the dissertation committee, and to sustain an oral examination on the dissertation.

The normative time for the Ph.D. degree is 18 quarters.

No SYNC graded courses may be applied toward the minimum unit requirement for the graduate degree(s).

**LOWER-DIVISION COURSES**

**WRLT 015. Language, Literature, and Culture. (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): none. Introduces students to the connections between language, literature, and culture over the centuries and across national traditions through study of an array of literary forms and genres. Close reading of masterworks, selected to provide an overview of the fields of literary, linguistic, and cultural analysis.

**WRLT 017A-WRLT 017B-WRLT 017C. Masterworks of World Literature. (4-4-4)**
Lecture, three hours; consultation, one hour. Reading and discussion of selected great works from around the world in historical and cultural contexts. 017A-017B: antiquity through the enlightenment, stressing textual analysis; 017C: the modern period stressing critical methods and approaches to comparative literature.

**WRLT 018. The Nature of Narrative. (4)**
Lecture, three hours; individual study three hours. Prerequisite(s): none. Examines the basic features of narrative, including plot, character, point of view, and space relations, within various literary forms including the anecdote, story, tale, novella, and novel. Bazow

**WRLT 020. Introduction to Film Studies. (4)**
Lecture, three hours; screening, three hours. Prerequisite(s): none. An introduction to the formal and narrative principles of film construction and to various
critical approaches to the cinema, such as auteur and genre theory. Provides an overview of world cinemas. Cross-listed with FVC 020.

**WRLT 021. Critical Approaches to World Cinema.** (4)
Lecture, three hours; screening, three hours. Prerequisite(s): none. Surveys critical approaches to the cinema as such as auteur and genre theory. Studies film movements and political cinema. Cross-listed with FVC 021.

**WRLT 025. The Sciences and Humanities through Science Fiction.** (4)
Lecture, three hours; outside research, three hours. An interdisciplinary course that considers science fiction as an interface between today’s scientific and humanistic disciplines. Using books, films, and works of art the course examines the interplay of these disciplines in science fiction’s treatment of such “big” themes: time, space, God, nature, mind, and the future. Slusser

**UPPER-DIVISION COURSES**

**WRLT 110. Literary Analysis and Criticism.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of different critical approaches to literature, through reading and discussion of literary texts and critical essays specifically on those texts. Reading and discussions cover different genres and traditions as well as different critical approaches. Hammer, McHugh, Zhang, Bloom

**WRLT 112. Mythology.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative study of mythic traditions from several world cultures and religions viewed from a variety of theoretical perspectives. Includes material drawn from epics, religious texts, divine hymns, creation myths, heroic legends, and concepts of the afterlife as reflected in literary and non-literary sources. Cross-listed with CLA 112 and RLST 117.

**WRLT 114. The Classical Tradition.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of the legacy of Greece and Rome in Western culture, from the Renaissance to the present. Topics include literature, art, architecture, and politics. Cross-listed with CLA 114. Scanlon

**CPLT 141L. Introduction to East-West Comparative Studies.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the basic issues in comparative literature studies of non-Western literatures and cultures. From Renaissance travelogue literature to postmodern mythologies of the Orient, critical and theoretical

issues are discussed in the light of the dynamic interactions between the East and the West. Raphals, Zhang

**CPLT 144. Buddhist Literature.** (4)
Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): RLST 005 or RLST 005H or RLST 101 or RLST 105 or RLST 106 or consent of instructor. Readings in canonical Buddhist narratives and examination of the themes of emptiness and impermanence in Buddhism-inspired literature. Examples are drawn from classical and modern Asian prose and poetry as well as from the work of contemporary American authors. Cross-listed with RLST 144.

**CPLT 146. Comedy and Satire.** (4)
Lecture, three hours; outside reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Investigation of the origins and historical development of contemporary Western culture’s two most popular genres. Although the focus is on literary texts ranging from Aristophanes to the present, the course also considers the many other cultural media through which the comic and the satiric find expression—among them, caricature drawing, photography, comic books, film, and television. Attention is given to debates about the related functions of irony, laughter, violence, and sexuality. Hammer

**CPLT 147 (E-Z). The Novel.** (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Investigation of the novel as a preeminent register of cultural values and common literary themes, derived from the various national literatures and literary epochs. The novel form is examined in terms of selected, related works by some of its greatest practitioners. E. The Essential Novel; F. The Carnivalesque. Danow

**CPLT 148. Short Narrative.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis and interpretation of short narrative texts from the linked perspectives of universal themes and shared literary concerns. The finest short prose, including the anecdote, short story, tale, and novella, by some of the world’s greatest writers is explored in depth. Danow.

**CPLT 148A-CPLT 148B. The Development of Classical Modern Drama.** (4-4)
Lecture, three hours; written work, three hours. Prerequisite(s): upper-division standing or consent of instructor. Consisting of readings, discussions, and lectures, this course treats plays and theories from the German, Scandinavian, Russian, and French repertory among others. 148A. From Naturalism to Expressionism (1880-1918); 148B. From the Theatre of the Absurdist to the Theatre of the Absurd.

**CPLT 160 (E-Z). Comparative Cultural Studies: From the Middle Ages to Postmodernism.** (4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Each segment deals with a significant cultural “event” whose implications (historical, political, literary) cross national and cultural boundaries. In order to present a diversity of national and linguistic views, segments are where feasible team-taught. E. The French Revolution and Napoleon; M. Millennium and Apocalypse; Bloom, Dow, Hamer, Shaprio, Slusser; Zhang

**WRLT 170. Third World Literature.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of some major works associated with Third World literature and film. Emphasis on African, Latin American, Caribbean, African-American, and Chicano literature. Cross-listed with ETST 170. Gugelberger

**CPLT 171 (E-Z). Auteur and Auteur Theory.** (4)
Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Critical studies on a director or group of directors that deal with a substantial portion of their works. F. Faizbinder

**CPLT 172 (E-Z). Topics in Film and Media Genres.** (4)
Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to a variety of film and media genres and critical approaches to these genres. E. Science Fiction and Film; M. Film Melodrama; R. Horror in the Cinema. Cross-listed with FVC 172 (E-Z). Bloom, Hamer, McHugh, Slusser

**CPLT 173 (E-Z). International, Independent, and Alternative Cinemas.** (4)
Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Considers non-Hollywood cinemas in the national, historical, political, and cultural contexts which produced them. E. Experimental and Avant-Garde Film; G. New German Cinema; I. Italian Neorealism; T. Third World Cinema. Cross-listed with FVC 173 (E-Z).

**CPLT 174 (E-Z). Comparative Studies in Film.** (4)
Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Considers film in the context of the other arts. COMPARES the treatment of various themes or problems in film and other media. E. Film and Literature in the Avant-Garde. Cross-listed with FVC 174 (E-Z).

**CPLT 175. Topics in Science Fiction and Fantasy.** (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines problems related to the modern genres of science fiction and fantasy. Topics include religion, politics, culture, and new modes of literary and visual experience such as cyberpunk. Bolton, Raphals, Slusser

**CPLT 184. Japanese Film and Visual Culture.** (4)
Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates popular visual culture in Japan primarily through film, from the early masters to contemporary directors. Additional material may be drawn from fields such as theatre, television, visual art, architecture, and illustrated fiction. All materials read or viewed in English. Course is repeatable to a maximum of 12 units. Cross-listed with AST 184, FVC 184, JPN 184.

**WRLT 178. Religion and the Biographical Image.** (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the construction and continuing appropriation of biographical images (textual and visual narratives) in selected religious traditions. Special attention to problems of intertextuality and the medium of presentation in the communication of “religious” meaning. Cross-listed with RLST 178. Nyitray

**WRLT 180 (E-Z). Literature and Related Fields.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A critical survey of the theories and methodologies involved in the comparative study of literature and
nonliterary fields. Examples may be drawn from fields such as political science, law, music, psychology, theatre, sociology, history, science, and philosophy. E. Literature and History; I. Literature and Institutions; L. Prelaw Readings in Literature; M. Literature and Music; P. Literature and Psychopathology; S. Literature and Science; V. Literature and the Visual Arts; X. Literature and Marxism; Z. Literature and Fiction/Fantasy.

GRADUATE COURSES

CPLT 215A. Contemporary Critical Theory. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing. Considered representative critical works and movements in contemporary theory. Includes the study of formalism, structuralism, semiotics, psychoanalytic and feminist theory, and deconstruction. Zhang, McHugh

CPLT 215B. Issues in Contemporary Theory. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing. Focuses on a specific problem or movement in contemporary theory. Course is repeatable as content changes. Zhang, McHugh

CPLT 216A. Semiotics Literature and Culture. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing. Traces the impact of semiotics and deconstruction from the seventeenth century; 217B: Examines works from the seventeenth century through the nineteenth century; 217C: Concludes the sequence by treating works of world literature. 217A: Treats literature, including the ancient epic of Greece and Rome, from its origins through the seventeenth century; 217B: Examines works from the seventeenth century through the nineteenth century; 217C: Concludes the sequence by treating works of the modern period.

CPLT 217A-CPLT 217B-CPLT 217C. Major Networks of World Literature. (4-4-4) Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing. Surveys masterworks of world literature. 217A: Treats literature, including the ancient epic of Greece and Rome. The workshop is jointly staffed. English and vice-versa as a basis for workshop discussion. Hammer.

CPLT 218. Narrative Universals. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing. Analysis of narrative in concrete literary works. Explores basic considerations and oppositions, including metaphor and metonymy, space and time relations, mimesis and deixis, monologue and dialogue, literal and figurative representation, within the context of specific representative texts. Danow, Slusser

CPLT 220. Research and Publication. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): open to graduate students in second or later year. Familiarizes students with the methods, modes, and aims of academic discourse, and with the mechanics, politics, and ethics involved in publishing articles and books. Students prepare an article or project for publication, and do "market" research to that end. Guest speakers give insights into the review process and university presses. Hammer, Slusser

CPLT 223. Translation Workshop. (4) Seminar, three hours. A workshop divided into two 5 week periods, the first being theoretical (comparative examination of ancient and modern theories of translation), the second being practical and dealing with the systematic application of the concepts. Translation will be considered as both a creative and critical act. Students will translate from foreign languages of their choice into English and vice-versa as a basis for workshop discussions. The workshop is jointly staffed. Hammer.

CPLT 285. Popular and Mass Cultures. (4) Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing. Examinations of the role of communication media in modern society. Students translate, both foreign and American, popular and mass culture texts, including advertising, novels, film, and television scripts.
co-cultural context, the idea of “popular” and mass culture. Problems considered are audience and marketplace; technologies of production; “canons” and contexts of authority; “minor” artists and standards of literary value. Hammer, McHugh, Slusser

CPLT 286. Interdisciplinary Studies. (4)
Seminar, three hours; individual study three hours. Prerequisite(s): graduate standing. Examines the idea of academic “disciplines.” Studies the relations between literary study and other fields, and how diverse disciplinary methods may be brought to bear on literature taken in the broadest multinational and multilingual context. Course is repeatable as content changes. Hammer, McHugh, Slusser

CPLT 290. Directed Studies. (1-6)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

CPLT 290 (E-Z). Directed Studies. (1-6)
Outside research, three to eighteen hours. Prerequisite(s): student standing consent of instructor and Department Chair. To be taken as a means of meeting special curricular needs in literature. E. English; F. French; G. German; H. Greek; I. Italian; J. Japanese; K. Chinese; L. Latin; M. Latin American; R. Russian; S. Spanish; T. Scandinavian; U. Sino; V. American. Segments are repeatable.

CPLT 291. Individual Studies in Coordinated Areas. (1-6)
A directed program of study designed to advise and assist candidates who are preparing for examinations. Open to M.A. and Ph.D. candidates. Does not count toward the unit requirement for the M.A. Graded Satisfactory (S) or No Credit (NC). May be repeated quarterly until the qualifying examinations are completed.

CPLT 292. Concurrent Analytical Studies. (2)
Research, six hours. Prerequisite(s): consent of instructor; concurrent enrollment in CPLT 100-series course. To be taken on an individual basis. Student will complete a graduate paper based on research related to the CPLT 100-series course. May be repeated with different topic.

CPLT 299. Research for Thesis or Dissertation. (1-12)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PROFESSIONAL COURSE

LTLG 301. Teaching of Foreign Language at the College Level. (4)
Description under Literatures and Languages.

CPLT 302. Teaching Practicum. (1-4)
Practicum, four to eight hours; discussion, one hour. Prerequisite(s): LTLG 301 or equivalent; graduate standing; employment as Teaching Assistant or Associate. Supervised teaching in lower-division courses. Required of all teaching assistants in World Literature. Graded Satisfactory (S) or No Credit (NC). May be repeated.

WRLT 302. Teaching Practicum. (1-4)
Practicum, four to eight hours; discussion, one hour. Prerequisite(s): LTLG 301 or equivalent; graduate standing; employment as Teaching Assistant or Associate. Supervised teaching in lower-division courses. Required of all teaching assistants in World Literature. Graded Satisfactory (S) or No Credit (NC). May be repeated.

C.L.A. 027A-C.L.A. 027B.
Classical Literature in Translation. (4-4)
Description under Classics.

GER 121 (E-Z).
Germanic Literature in Translation. (4)
Description under German.

ITAL 139. The Divine Comedy. (4)
Description under Italian.

RLST 120. The Bible, from Egypt to Exile. (4)
Description under Religious Studies.

RUSN 109A-RUSN 109B-RUSN 109C.
Survey of Russian Literature in Translation. (4)
Description under Russian Studies.

RUSN 110 (E-Z). Masters of Russian Literature. (4)
Description under Russian Studies.

FOREIGN LANGUAGES,
LANGUAGE,
AND LINGUISTICS

FRENCH
Subject abbreviation: FREN

Attention is directed to the Education Abroad programs in Bordeaux, Grenoble, Lyon, Toulouse, and a special program in Paris. Contact International Services at (909) 787-4113.

The Department offers the B.A. program in French civilization, literature, and language.

Major
The core of the major is the study of French culture, literature, or language. Students work in consultation with their advisors, developing their interests in relation to French literature, civilization, or language. Students can take the major with either a Literature option or a Civilization option.

French Literature Option
1. Language proficiency — 16 upper-division units of work in the French language distributed as follows:
   a) FREN 101A-FREN 101B-FREN 101C
   b) One quarter of FREN 100 or FREN 104

2. Literature concentration
   a) CLA 027A-CLA 027B
   b) A minimum of 36 units distributed as follows
      (1) WRLT 110

(2) FREN 109A-FREN 109B-FREN 109C-FREN 109D
(3) Sixteen (16) units of electives in French literature chosen from courses numbered 145 and above

French Civilization Option
1. Language proficiency: FREN 101A-FREN 101B-FREN 101C or equivalents
2. Civilization concentration (44 units)
   a) Sixteen (16) units from EUR 114A-EUR 114B-EUR 114C or EUR 116A-EUR 116B
   b) Eight (8) units of work in French literature
   c) Four (4) units in EUR 191
   d) Four (4) units from FREN 100 or FREN 104
   e) Twelve (12) units of electives, either in French civilization and French literature, or, with approval of the student's advisor, in courses outside the French program relating to French civilization (Related history courses are strongly recommended.)

Foreign Language Placement Examination. A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the Quarterly Schedule of Classes for date and time. Transfer students who have taken college-level language courses should consult with their advisors. No college-level credit may be duplicated.

Minor
The Department offers a 24-unit disciplinary minor in French.

Requirements for the minor
1. Twelve (12) units of FREN 101A-FREN 101B-FREN 101C
2. Four (4) units of FREN 100

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Honors Program
Students who wish to undertake a special program of honors study in upper-division courses should apply to the Department.
GRADUATE PROGRAMS

Master's Degree

The Master's program in French is not currently accepting new students.

Doctoral Degree

Ph.D. studies in French are available through the Ph.D. program in Comparative Literature.

LOWER-DIVISION COURSES

FREN 001-FREN 002-FREN 003.
Elementary French. (4-4-4) F,W,S
Lecture, three hours; discussion, one hour.
Prerequisite(s): for FREN 001: none; for FREN 002: FREN 001; for FREN 003: FREN 002 or equivalent. An introduction to the sound system and grammar of French, with attention to the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in French. Audio-lingual and computer-based learning materials available in language laboratory. Truby

FREN 004. Intermediate French. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): FREN 003 or equivalent. Continued study of the grammatical structures of French; vocabulary building, development of reading and compositional skills. Classes conducted in French. Truby

FREN 009A-FREN 009B.
French for Reading Knowledge. (4-4)
Lecture, three hours. No previous knowledge of French required. A specialized course developing the skills to translate from French into English.

FREN 010A-FREN 010B-FREN 010C.
Accelerated French. (6-6-6)
Lecture, four hours; discussion, two hours.
Prerequisite(s): for FREN 010A: none; for FREN 010B: FREN 010A or equivalent, for FREN 010C. FREN 010B or FREN 003 or equivalent. Accelerated study of French. FREN 010A-FREN 010B provide the equivalent to FREN 001-FREN 002-FREN 003 including the four basic skills: listening, speaking, reading, and writing. FREN 010C focuses on reading and translation of academic materials in various disciplines and is equivalent to FREN 004. Credit is awarded for only one of FREN 001-FREN 002-FREN 003 or FREN 010A-FREN 010B sequences. Truby

FREN 015A-FREN 015B.
Intermediate Conversation and Composition. (4-4) F,W,S
Lecture, three hours; individual study, three hours.
Prerequisite(s): FREN 004 or consent of instructor. Development of speaking, understanding, composition, and reading at the intermediate level. Review of basic grammar with an aim to active oral and written command. Classes conducted in French. Truby

FREN 025. Conversation. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): FREN 004 or equivalent. Practice at the intermediate level in understanding and speaking everyday French.

FREN 030 (E-Z).
Masterworks of French Literature in English Translation. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): one semester of French literature. French works are read in English translation; no knowledge of French is required. E. From the Eighteenth Century through the Twentieth Century: The Enlightenment to Existentialism; S. Short Fiction. Bloom, Griffin

FREN 040 (E-Z).
Themes in French Literature. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): none. Detailed study of major themes in French literature of various periods. Lectures, readings, and papers will be in English. E. Crime and Transgression. Bloom, Griffin

FREN 045. French Cinema. (4)
Lecture, three hours; individual study, three hours; screening, two hours.
Prerequisite(s): none. Masterpieces of French cinema. The historical evolution of French Cinema as an art form with emphasis on major themes and directors. Bloom, Griffin

FREN 090. Special Studies. (1-3)
To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems. Course is repeatable.

UPPER-DIVISION COURSES

FREN 100. Advanced Conversation. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): for FREN 101A and FREN 101B: FREN 015B or equivalent. Practice in the development of oral proficiency and fluency of expression. Only 4 units to apply toward the major. Course is repeatable. Truby

FREN 101A-FREN 101B-FREN 101C.
Advanced Grammar and Stylistics. (4-4-4) F,W,S
Lecture, three hours; individual study, three hours.
Prerequisite(s): for FREN 101A and FREN 101B: FREN 015B or equivalent, for FREN 101C. FREN 101B or FREN 003 or equivalent. Accelerated study of French. FREN 101A-FREN 101B provide the equivalent to FREN 001-FREN 002-FREN 003 including the four basic skills: listening, speaking, reading, and writing. FREN 101C focuses on reading and translation of academic materials in various disciplines and is equivalent to FREN 004. Credit is awarded for only one of FREN 001-FREN 002-FREN 003 or FREN 101A-FREN 101B sequences. Credit is awarded for only one of FREN 001 or FREN 010C.

FREN 104. Phonetics. (4)
Lecture, three hours; consultation, one hour.
Prerequisite(s): FREN 015A. A descriptive, normative, and contrastive analysis of the Phonetics of French. Emphasis on the learning of a good French pronunciation. Truby

FREN 109A-FREN 109B-FREN 109C-FREN 109D.
Main Currents in French Literature. (4-4-4-4)
Lecture, three hours; consultation, one hour.
Prerequisite(s): comprehension of written and spoken French. A study of the principal movements in French literature from the Middle Ages through the twentieth century, based on the reading of representative works in their entirety: FREN 109A: Middle Ages and Renaissance; FREN 109B: Seventeenth and Eighteenth Centuries; FREN 109C: Nineteenth Century; FREN 109D: Twentieth Century. Bloom, Shapiro, Truby

EUR 112A-EUR 112B-EUR 114C.
French Civilization. (4-4-4)
Description under Civilization.

EUR 115 (E-Z).
French Studies. (4)
Description under Civilization.

EUR 116A-EUR 116B. Modern and Contemporary France. (4-4)
Description under Civilization.

FREN 122 (E-Z).
Gender in French Studies. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): comprehension of written and spoken French. The changing perception of the world, from the Renaissance to Classicism, as seen in art and literature of the baroque period. Poetry, drama, Montaigne's Essays and French and Italian art will all provide material for the course.

Lecture, three hours; consultation, one hour.
Prerequisite(s): comprehension of written and spoken French. Study of selected topics in seventeenth-century French literature. M. Moralists; T. Classical Theatre.

Lecture, three hours; term paper, three hours.
Prerequisite(s): upper-division standing or consent of instructor. Major works of nineteenth-century French novelists including Balzac, Flaubert, Zola, Huysmans, and others. Emphasis on romanticism, realism, and naturalism, and decadence. Griffin, Bloom

FREN 177 (E-Z).
Studies in Nineteenth Century French Literature. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): comprehension of written and spoken French. Study of selected topics in nineteenth-century French literature. N. Nineteenth Century Novel: S. Symbolism; R. Romanticism.

FREN 182. Francophone Literature in Translation. (4)
Lecture, three hours; term paper, three hours.
Prerequisite(s): upper-division standing or consent of instructor. Major works of the Francophone. Emphasis on the relation to the metropolis, immigration issues, polyglotism, race, class, and gender issues. Gugelberger, Shapiro

French / Comparative Literature and Foreign Languages / 171
FREN 183. North African Fiction in French Translation. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Emphasis on colonialism, postcolonialism, Islam, bilingualism, and gender issues. No knowledge of French is required. Gugelberger, Shapiro.

FREN 184. Twentieth Century French Novel in Translation. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Major works of twentieth-century French novelists including Proust, Gide, Sartre, Camus, Robbe-Grillet, Sarraste, Duras, and others. Emphasis on modernism, existentialism, and the French New Novel. Bloom, Shapiro.

FREN 185. The Twentieth Century Novel. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): upper-division standing. From Proust to the present, including Existentialism and the New Novel. Texts in French for French majors; texts in English for non-French readers. Bloom, Shapiro.

FREN 186. Theatre of the Twentieth Century. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): comprehension of written and spoken French. A study of major representative playwrights of the twentieth century, with emphasis on the traditional and/or avant garde theater. Bloom, Shapiro.

FREN 189. Special Studies. (1-5)
To be taken with the consent of the department chair as a means of meeting special curricular problems. Course is repeatable.

FREN 195H. Senior Honor Thesis. (1-4)
Consultation, one hour; individual study three to nine hours. Prerequisite(s): invitation by faculty to pursue honors work in French. Senior standing. Intensive study and research in consultation with a faculty member, leading to a senior thesis. Grades will be deferred until presentation of the thesis during the final quarter. Satisfactory (S) or No Credit (NC) grading is not available. To be taken during two or three consecutive quarters; repeatable to a maximum of 8 units. Bloom, Shapiro.

GERMAN

ITALIAN

FREN 260. Seminar in French Civilization. (4)
Seminar, three hours; outside reading, three hours. Prerequisite(s): graduate standing. Focus is on methodology of cultural history. Topics may vary. May be repeated for credit. Shapiro.

FREN 263. Seminar in the Seventeenth Century. (4)
Seminar, three hours; outside reading, three hours. Prerequisite(s): graduate standing. Intensive study of special topics in seventeenth century literature and civilization. May be repeated for credit.

FREN 265. Seminar in the Nineteenth Century. (4)
Seminar, three hours; outside reading, three hours. Prerequisite(s): graduate standing. Intensive study of special topics in nineteenth century literature and civilization. May be repeated for credit. Bloom, Shapiro.

FREN 290. Directed Studies. (1-6)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

FREN 291. Individual Studies in Coordinated Areas. (1-6)
A program of studies designed to advise and assist candidates who are preparing for examinations. Open to MA candidates. Does not count toward the unit requirement for the MA. May be repeated quarterly until the qualifying examinations are completed. Graded Satisfactory (S) or No Credit (NC).

FREN 292. Concurrent Analytical Studies. (2)
Research, six hours. Prerequisite(s): consent of instructor; concurrent enrollment in French 100-series course. To be taken on an individual basis. Student will complete a graduate paper based on research related to the French 100-series course. May be repeated with different topic. Graded Satisfactory (S) or No Credit (NC).

FREN 295. Research for Thesis or Dissertation. (1-12)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PROFESSIONAL COURSES

LTLG 301. Teaching of Foreign Language at the College Level. (4)
Description under Literatures and Languages.

LTLG 302. Teaching Practicum. (1-4)
Practicum, four to eight hours; discussion, one hour. Prerequisite(s): LTLG 301 or equivalent; graduate standing; employment as Teaching Assistant or Associate. Supervised teaching in lower-division courses. Required of all teaching assistants in French. Graded Satisfactory (S) or No Credit (NC). May be repeated.

GERMAN

Subject abbreviation: GER

Attention is directed to the Education Abroad programs in Bayreuth, Berlin, Göttingen, and Potsdam. UCR students have the opportunity to study there while still earning UC credits. Contact International Services Center at (909) 787-4113.

GERMAN LITERATURE OPTION

1. Language proficiency
   a) GER 015A or equivalent as determined by a proficiency test
   b) Sixteen (16) upper-division units in the German language distributed as follows: GER 102, GER 103A-GER 103B, GER 108

2. Literature concentration
   a) CLA 027A-CLA 027B and WRIT 015
   b) Thirty-six (36) upper-division units distributed as follows:
      (1) Four (4) units in WRIT 110
      (2) Thirty-two (32) units in German literature including GER 100 and GER 191 (EUR 191 may be applied to the unit requirement subject to approval of the Department chair; if the seminar topic is appropriate to the major.)

GERMAN LANGUAGE OPTION

1. The completion of course 5 or equivalent in another foreign language

2. WRIT 015

3. A minimum of 44 units of upper-division work in German distributed as follows:
   a) GER 100, GER 102, GER 103A-GER 103B, GER 109A-GER 109B, GER 108
   b) Sixteen (16) units in German literature
   4. Four (4) units in teaching methodology
   5. One seminar of GER 191

GERMAN CIVILIZATION OPTION

1. Language proficiency — 12 upper-division units (or equivalent) of work in the German language from GER 102, GER 103A-GER 103B

2. Literature concentration (44 units)
   a) Twelve (12) units from EUR 112A-EUR 112B-EUR 112C-EUR 112D
   b) Twelve (12) units of work in German literature, to include GER 100
   c) EUR 191
   d) Twelve (12) units of electives, either in German civilization and German litera-
3. WRIT 015

Minor
The Department offers a 24-unit disciplinary minor in German.

Requirements for the minor
1. Twelve (12) units of GER 102, GER 103A-GER 103B
2. Twelve (12) units of German Literature or 12 units of German Civilization (any three courses from EUR 112A-EUR 112B-EUR 112C-EUR 112D)

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Honors Program
Students who wish to undertake a special program of honors study in the upper-division should apply at the beginning of the junior year. Acceptance for honors study is based on students' previous grade records and the recommendations of their instructors. Candidates for honors are expected to demonstrate superior capacity for independent study and during the senior year are required write an individually directed senior thesis.

Foreign Language Placement Examination. A placement examination is required of all freshmen entering the College of Humanities, Arts, and Social Sciences who wish to meet the foreign language requirement with the same language taken in high school. Consult the quarterly schedule of classes for date and time. Students who have taken college-level language courses should consult their advisors. No college-level credit may be duplicated.

GRADUATE PROGRAMS

Master's Degree
The Master's program in German is not currently accepting new students.

Doctoral Degree
Ph.D. studies in German are available through the Ph.D. program in Comparative Literature.
GER 185. Currents in Modern German Literature. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): GER 130 or consent of instructor. Introduction to the phonology and structure of Middle High German; reading selected texts.

LT-LG 250. Colloquium in Literatures and Languages. (1-2)
Description under Literatures and Languages.

GER 268. Seminar in Twentieth-Century Literature. (4)
Seminar, three hours. Special topics in twentieth-century literature. Topics may vary. Course is repeatable.

GER 290. Directed Studies. (1-6)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

GER 291. Individual Studies in Coordinated Areas. (1-6)
A program of studies designed to advise and assist candidates who are preparing for examinations. Open to M.A. and Ph.D. candidates. Does not count toward the unit requirement for the M.A. Graded Satisfactory (S) or No Credit (NC). May be repeated quarterly until the qualifying examinations are completed.

GER 292. Concurrent Analytical Studies. (2)
Research, six hours. Prerequisite(s): consent of instructor; concurrent enrollment in German 100-series course. To be taken on an individual basis. Student will complete a graduate paper based on research related to the German 100-series course. Course is repeatable with different topics.

GER 299. Research for Thesis or Dissertation. (1-12)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

LTLG 301. Teaching of Foreign Language at the College Level. (4)
Description under Literatures and Languages.
ITAL 139. The Divine Comedy (4)
Lecture, three hours; consultation, one hour. A close reading of Dante’s Divine Comedy, using a bilingual edition. Attention is paid to conceptual and aesthetic questions. Although the work is read in English, students without previous knowledge of Italian are given some instruction in it to enable them to understand parts of the original.

ITAL 162. Contemporary Italian Women Writers in Translation. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Study of works by contemporary Italian women writers from critical, cultural, and historical perspectives. No knowledge of Italian is required. Mehrmand, Shapiro

ITAL 185. Modern and Contemporary Italian Literature in Translation. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Considered works by authors who exemplify major cultural and literary trends in Italy from the period of unification (1860s) to the present. Readings are supplemented by viewing of films. No knowledge of Italian is required. Cross-listed with WRT 185. Mehrmand, Shapiro

ITAL 190. Special Studies. (1-5)
To be taken with the consent of the chair of the department as a means of meeting special curricular problems. Course is repeatable.

GRADUATE COURSES

CPLT 290. Directed Studies in Italian Literature. (1-6)
Description under Comparative Literature.

ITAL 292. Concurrent Analytical Studies. (2)
Research, six hours. Prerequisite(s): consent of instructor; concurrent enrollment in Italian 100-series course. To be taken on an individual basis. Student will complete a graduate paper based on research related to the Italian 100-series course. May be repeated with different topics.

PROFESSIONAL COURSES

LTLG 301. Teaching of Foreign Language at the College Level. (4)
Description under Literatures and Languages.

ITAL 302. Teaching Practicum. (1-4)
Practicum, four to eight hours; discussion, one hour. Prerequisite(s): LTLG 301 or equivalent; graduate standing; employment as Teaching Assistant or Associate. Supervised teaching in lower-division courses. Required of all teaching assistants in Italian. Graded Satisfactory (S) or No Credit (NC). May be repeated.

RUSSIAN

Subject abbreviation: RUSN

Attention is directed to the Education Abroad Program in Moscow. Contact International Services for information at (909) 787-4113.

Major

The Russian Studies major has been developed for students who are interested in Russian language and literature, Russian history and civilization.

Individual major programs are dependent upon the students’ particular interests. In consultation with the advisor, each student plans a coherent program of courses to meet the requirements for the major. Normally, students’ programs are submitted for approval no later than the beginning of their junior year.

1. Lower-division requirement
   a) WRIT 015
   b) Upper-division requirements
      a) Language requirement
         Twelve (12) units from
         RUSN 101 (E-Z), RUSN 102 (E-Z),
         RUSN 120 (E-Z), RUSN 103
      b) Literature requirement
         Twelve (12) units: RUSN 109A-
         RUSN 109B-RUSN 109C, RUSN 124,
         RUSN 181 (E-Z)

2. Civilization requirements
   Twelve (12) units from EUR 111A-
   EUR 111B-EUR 111C-EUR 111D, RUSN 150

In addition, 24 units will be selected from
RUSN 110 (E-Z), RUSN 140, RUSN 182 (E-Z),
RUSN 183 (E-Z), EUR 113 (E-Z), or appropriate courses in other programs, including linguistics, comparative literature, Russian history, economics, and political science. Total units: 60.

Minor

The Department offers a 24-unit disciplinary minor in Russian Studies.

The requirements for the minor are as follows:

1. Eight (8) units of RUSN 101 (E-Z),
   RUSN 102 (E-Z), RUSN 103

2. Sixteen (16) units of Russian Literature and Civilization courses chosen from the following:
   RUSN 109A-RUSN 109B-RUSN 109C,
   RUSN 110 (E-Z), RUSN 120 (E-Z),
   EUR 111A-EUR 111B-EUR 111C-
   EUR 111D, EUR 113 (E-Z),
   RUSN 150

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

LOWER-DIVISION COURSES

RUSN 001. Elementary Russian (Part I). (4)
Lecture, four hours. Prerequisite(s): none. Part I of the Elementary Russian series. An introduction to the sound system and grammar of Russian, with attention to the development of the four skills of listening, speaking, reading, and writing.

RUSN 001R-RUSN 002R. Elementary Russian for Reading Knowledge. (6-6)
Lecture, four hours; discussion, one hour; outside research, three hours. Prerequisite(s): none. RUSN 001R, RUSN 001R for RUSN 002R or consent of instructor. Intensive two-quarter course sequence in reading Russian expository prose in professional, scholarly and scientific fields. Equivalent to RUSN 001-RUSN 002-RUSN 003; qualifies student for RUSN 004.

RUSN 002. Elementary Russian (Part II). (4)
Lecture, four hours. Prerequisite(s): RUSN 001 or consent of instructor. Part II of the Elementary Russian series. See course description under RUSN 001.

RUSN 003. Elementary Russian (Part III). (4)
Lecture, four hours. Prerequisite(s): RUSN 002 or consent of instructor. Part III of the Elementary Russian series. See course description under RUSN 001.

RUSN 004. Intermediate Russian (Part I). (4)
Lecture, four hours. Prerequisite(s): RUSN 003, RUSN 002R or consent of instructor. Part I of the Intermediate Russian series. A comprehensive review of the basic grammatical structures of Russian, as well as a study of irregular and idiomatic forms, vocabulary building, development of conversation and composition skills.

RUSN 005. Intermediate Russian (Part II). (4)
Lecture, four hours. Prerequisite(s): RUSN 004 or consent of instructor. Part II of the Intermediate Russian series. See course description under RUSN 004.

RUSN 006. Intermediate Russian (Part III). (4)
Lecture, four hours. Prerequisite(s): RUSN 005 or consent of instructor. Part III of the Intermediate Russian series. See course description under RUSN 004.

RUSN 027. Russian Conversation. (1)
Discussion, one hour. Prerequisite(s): RUSN 001. Weekly discussion of topics of current interest, intended to develop and maintain basic conversational skills. To be taken on a Satisfactory (S) or No Credit (NC) basis only. May be repeated for a total of 6 units.

RUSN 045. Soviet Cinema. (4)
Lecture, three hours; screening, three hours. Prerequisite(s): none. A survey of the Soviet cinema, beginning with the film innovations of the 1920’s and continuing with representative films from each of the ensuing periods of Soviet culture. All work done in English.

RUSN 090. Special Studies. (1-5)
To be taken with the consent of the chair of the department as a means of meeting special curricular problems. Course is repeatable.
RUSN 101 (E-Z). Advanced Russian. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): RUSN 90 or consent of instructor. Students read texts in literature and expository prose, with attention to usage, style, grammar, and interpretation. Emphasis on developing reading and translating skills for adult-level reading competence. G: Readings from Poetry; J: Readings from Soviet Literature; M: Readings from Drama; N: Readings in History; O: Readings in Social Science; Q: Readings in Newspapers and Popular Literature; R: Readings from Classics of Russian Literature.

RUSN 102 (E-Z). Advanced Russian: Grammar. (2)
Lecture, two hours. Prerequisite(s): RUSN 006 or consent of instructor. Each segment will deal with a specific topic in Russian grammar at an advanced level. Texts or materials vary from quarter to quarter. E: Nominal Declensions; F: Syntax I; G: Phonetics; I: Syntax II; J: Syntax III; K: Vocabulary Building; M: Verb Morphology.

RUSN 103. Advanced Russian Conversation and Composition. (2)
Lecture, two hours. Prerequisite(s): RUSN 005 or consent of instructor. Conversation and short compositions in Russian. Intended to develop and maintain basic conversational and writing skills. Course is repeatable to a maximum of 8 units.

Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to major literary figures and representative works of the nineteenth and twentieth centuries. Any course within the RUSN 109A-RUSN 109B-RUSN 109C sequence may be taken independently. RUSN 109A: Masterpieces of the Golden Age (1830-1880); RUSN 109B: Classics of the late nineteenth century and prerevolutionary twentieth century (1880-1917); RUSN 109C: Major works of the Soviet period (1917-1991).

RUSN 110 (E-Z). Masters of Russian Literature. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Readings and discussion of the works of major Russian writers. Topic varies from quarter to quarter. Readings in Russian recommended for Russian majors; other students may read either in Russian or in translation. G. Gogol; H. Chekhov; I. Dostoevsky; J. Tolstoy; P. Pushkin.

EUR 111A-EUR 111B-EUR 111C-EUR 111D. Survey of Russian Civilization. (4-4-4-4) F,W,S
Description under Civilization.

EUR 113 (E-Z). Special Topics in Russian Civilization. (4)
Description under Civilization.

RUSN 120 (E-Z). Studies in Russian Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): RUSN 005 or consent of instructor. Analysis and discussion of representative works of Russian literature. Readings will be in Russian and will vary from quarter to quarter. F: Readings in Twentieth Century; G: Readings in Nineteenth Century.

RUSN 124. Great Russian Short Stories. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the Russian short story as refined and developed by Russia’s greatest practitioners of this highly important literary form. Danow

RUSN 140. Soviet Science Fiction. (4)
Lecture, three hours. Emphasis will be placed on the relationship of Soviet science fiction themes to the literature of Socialist Realism and as a means of expressing criticism of Soviet society. No knowledge of Russian is necessary.

RUSN 150. Introduction to Slavic Languages. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): LING 020 or RUSN 004 or consent of instructor. Survey of the principal stages and primary influences in the development of the Slavic languages. Levin

RUSN 181 (E-Z). Studies in Literature and Criticism. (4)

RUSN 182 (E-Z). Studies in Russian Grammar. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): RUSN 101 (E-Z) (8 units), LING 020 or RUSN 150, or consent of instructor. Topic, varying from quarter to quarter, in the field of history or grammar of Russian. E: Aspect. Levin

RUSN 183 (E-Z). Studies in Slavic Languages. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): RUSN 101 (E-Z) (12 units), LING 020, RUSN 150, or consent of instructor. Topic will vary from quarter to quarter and will involve the history or grammar of Slavic languages (other than Russian) as compared to the Russian language. E: Old Church Slavonic.

RUSN 190. Special Studies. (1-5)
To be taken with the consent of the chairman of the department as a means of meeting special curricular problems. Course is repeatable.

RUSN 195. Senior Thesis. (1-4)
Outside research, three to twelve hours. Prerequisite(s): senior standing and consent of instructor. The student works independently with a faculty member doing research and preparing a thesis as a final phase of the student’s major.

CPLT 290R (E-Z). Directed Studies in Russian Literature. (1-6)
Description under Comparative Literature.

RUSN 292. Concurrent Analytical Studies. (2)
Research, six hours. Prerequisite(s): consent of instructor; concurrent enrollment in RUSN 100-series course. To be taken on an individual basis. Student will complete a graduate paper based on research related to the RUSN 100-series course. May be repeated with different topics. RUSN 103 may not be used for RUSN 292.

The B.A. in Language allows a student to specialize in two or three foreign languages, through a knowledge not only of the languages themselves but also of the bases of language (linguistics), examples of their creative use (literature), and the cultures which they reflect (civilization).

Students interested in a single language concentration should see individual language program listings in this catalog.

Two Foreign Languages Option
1. LING 020 and WRLT 015
2. Elementary and intermediate courses in language one and two as required
3. Sixty-four (64) upper-division units distributed as follows:
   a) Language one — 28 units which must include the following minimums:
      (1) Sixteen (16) units in language
      (2) Twelve (12) units in literature and civilization
   b) Language two — 20 units which must include the following minimums:
      (1) Twelve (12) units in language
      (2) Eight (8) units in literature and civilization
   c) LING 111 — 4 units
   d) One other course in Linguistics — 4 units
   e) Eight (8) units of electives in any of the above-mentioned areas

Three Foreign Languages Option
1. LING 020 and WRLT 015
2. Elementary and intermediate courses in Language one, two, and three as required
3. Sixty-four (64) upper-division units distributed as follows:
a) Language one — 20 units which must include the following minimums:
   (1) Twelve (12) units in language
   (2) Eight (8) units in literature and civilization
b) Language two — 20 units which must include the following minimums:
   (1) Twelve (12) units in language
   (2) Eight (8) units in literature and civilization
c) Language three — 12 units in language
d) LING 111 — 4 units
e) One other course in Linguistics — 4 units
f) Four (4) units in electives from any of the above-mentioned areas

LITERATURES AND LANGUAGES

Subject abbreviation: LTLG

GRADUATE COURSE

LTLG 250. Colloquium in Literatures and Languages (1-2)
Seminar, one hour. Lectures and discussions by staff, visiting scholars and students on current research topic. Students delivering lectures and discussions may take the course for 2 units, students attending lecture and discussions may take the course for 1 unit. Graded Satisfactory (S) or No Credit (NC). Repeatable to a maximum of 12 units. May not count towards minimum unit requirement for degree.

PROFESSIONAL COURSE

LTLG 301. Teaching of Foreign Language at the College Level. (4)
Prerequisite(s): graduate standing; seniors may be admitted by consent of instructor. First and second language acquisition; general models of L2 learning; learning different types of grammar; learning other components of language; acquisition of pronunciation, vocabulary, and discourse; multilingual societies and the goals of language teaching, and implications of second language acquisition research for the foreign language classroom. Graded Satisfactory (S) or No Credit (NC).

LINGUISTICS

Subject abbreviation: LING

Linguistics is the science of language. It seeks to discover the psychological and motor mechanisms of human speech, the similarities and differences among languages, how languages change, and the way in which language is acquired. Because linguistics is largely independent of fields with which the student is likely to be familiar, no special background is required for students entering the major.

Linguistics interacts with a wide variety of fields, such as articulatory phonetics (biology), acoustic phonetics (physics), field methods (anthropology), language and culture (anthropology), sociolinguistics, psycholinguistics, neurolinguistics, logic, the philosophy of language, and the study of particular languages (including their history). This interaction provides opportunities for students with varied interests and can give new perspectives to those in related disciplines.

Major

Upon electing the linguistics major, and certainly no later than the middle of the sophomore year, a student should see the Director of the Linguistics Committee for advising.

The Director of the Committee can help students find a suitable advisor to file the necessary forms. In consultation with an advisor, a student plans a coherent program of specific courses to meet the requirements below. The student and the advisor must then submit a copy of the program to the full Committee on Linguistics for approval.

Students interested in the linguistics major should request from the Committee Director information concerning the many possible course programs. Many of them permit double majors, thus providing strong preparation for further study in two fields.

Students may add variety and depth to their UCR linguistics major by attending a Summer Program in Linguistics (held in various places) or by participating in the Education Abroad Program. Students interested in spending their junior year abroad should apply by their junior year abroad deadline. For details contact the International Services Center at (909) 787-4113.

1. LING 020.
2. Twenty-four (24) upper-division units distributed as follows:
   a) LING 111, LING 121, LING 131, LING 141
   b) ANTH 123
   c) PSYC 135/HMDV 135, or PHIL 152
3. At least 12 additional upper-division units of linguistic electives, to be chosen in consultation with the advisor and with the approval of the Linguistics Program Director. (The additional courses may be in linguistics or in related fields. They may relate either to a particular field or specialization or to general linguistics.)
4. Foreign language proficiency equivalent to six quarters (24 units) of study, including at least fourth-quarter proficiency in one language. (Students may arrange with the Director to satisfy this requirement by examination.)

Honors Program in Linguistics

1. Linguistics requirement: LING 020, LING 111, LING 121, LING 141, LING 190, LING 191
2. Related courses requirement:
   a) ANTH 120, ANTH 123
   b) ENGL 112
   c) PSYC 008, PSYC 010, PSYC 012
   d) MATH 144
   e) PHIL 008 or PHIL 008H
   f) Additional courses as may be required by the Linguistics Committee

3. Language Requirement — study in at least two language areas:
   a) Primary language: 24 units of foreign language instruction in a single language (this may include any courses taught in that language) plus courses in the structure, phonetics and history of the primary language, if available
   b) Secondary language: 16 units of a single language or at least 8 units in each of two languages (none of which may be members of the same subfamily of Indo-European as the primary language) plus at least 8 units in the structure, phonetics, or history of the language(s) chosen for the secondary area

In fulfilling the language requirement, students interested in earning a degree beyond the B.A. should take into account the foreign language requirements of the graduate schools to which they may apply.

Students must have at least a 3.00 GPA in courses required for the Honors Program.

LOWER-DIVISION COURSES

LING 020. Language and Linguistics. (4)
Lecture, three hours. An introduction to modern linguistics. The nature of language: language structure; grammar; the languages of the world; historical and comparative linguistics; interdisciplinary approaches, including anthropological and psycholinguistics. Levin, Megenney, Waltz

LING 021. Grammar. (4)
Lecture, three hours; consultation, one hour. Fundamental concepts of grammatical structure: parts of speech, paradigms, word families, agreement and government, the grammar of sentences and longer units of discourse; style.

Levin, Megenney, Waltz
LING 111. Phonetics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): LING 020. Practice in transcribing and recognizing sounds from many languages. Methods of transcribing and analyzing these sounds. Kronenfeld, Waltz

LING 121. Syntax. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): LING 020. Survey of various approaches to syntax, including transformational, syntactic structures of English and other languages are examined. Applications: English, foreign languages, philosophy, mathematics. Kronenfeld, Waltz

LING 131. Morphology. (4)
Lecture, three hours; seminar, one hour. Prerequisite(s): LING 020, LING 111 or LING 121. Studies word structure, the lexical component of language, allomorphy, types of morphemes, inflectional and derivational morphology. Examines various theories of lexical/morphological organization in the brain. Examples are taken from English and other Indo-European languages. Levin.

LING 141. Phonology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): LING 111. Introduction to the study of functional sound units in speech, including phonotactics, morphophonemics. Various theories are examined, including generative. Applications: speech correction, speech analysis, English, foreign languages. Levin

LING 160 (E-Z). Topics in Dynamic and Comparative Linguistics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): LING 111, LING 121 or LING 141. Comparative analyses of language groups such as Spanish and Portuguese, Slavic languages, and Native American languages. E. Historical Linguistics; F. Dialectology; G. Language Change; I. Sociolinguistics.

LING 167. Structural/Descriptive Linguistics. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): LING 020 or consent of instructor. An overview from the original sources of the contribution of major figures and schools in linguistics from Saussure through early Chomsky. Cross-listed with ANTH 167. Kronenfeld

LING 190. Special Studies. (1-5)
To be taken with the consent of the chair of the Committee as a means of meeting special curricular problems. Course is repeatable.

LING 191. Seminar in Linguistics. (4)
Seminar, three hours; consultation, one hour. Selected topics in language and linguistics. Course may be repeated for credit up to 12 units.

LING 192. Tutorial Activities. (1-2)
Prerequisite(s): junior or senior standing and nomination by faculty. Enlarging understanding of linguistics through conducting tutorial sessions in introductory courses, under the supervision of faculty members responsible for the courses involved. The course will be graded on a Satisfactory (S) or No Credit (NC) basis and may be taken for a maximum of three quarters.

LING 195. Senior Thesis. (2-4)
Thesis, six to twelve hours. Prerequisite(s): senior standing or consent of instructor. Independent research and preparation of a thesis completed under the supervision of a faculty member. Course is repeatable to a maximum of 12 units. Levin

LING 195H. Senior Honors Thesis. (2-4)
Thesis, six to twelve hours. Prerequisite(s): invitation by faculty to pursue honors work in linguistics; senior standing or consent of instructor. Intensive study, research, and preparation of a thesis in consultation with a faculty member. Grades are deferred until presentation of the thesis at the end of the final quarter. Satisfactory (S) or No Credit (NC) grading is not available. To be taken during two or three successive quarters; course is repeatable to a maximum of 12 units. Levin

RELATED COURSES
Refer to departmental listings for course descriptions.

Anthropology
ANTH 120. Language and Culture
ANTH 123. Linguistic Anthropology
ANTH 165. Cognitive Anthropology
ANTH 259. Anthropological Linguistics

Education
EDUC 121. Language and Speech Development and Disorders
EDUC 201A. Theories and Processes of Reading

English
ENGL 112. History of the English Language

French (Comparative Literature and Foreign Languages)
FREN 104. Phonetics
FREN 220. Reading of Old French Texts

German (Comparative Literature and Foreign Languages)
GER 130. History of the German Language

Mathematics
MATH 144. Introduction to Set Theory

Philosophy
PHIL 125. Intermediate Logic
PHIL 126. Advanced Logic
PHIL 152. Philosophy of Language

Psychology
PSYC 110. The Brain and Behavior
PSYC 134. Cognitive Processes
PSYC 135/HMDV 135. Psycholinguistics
PSYC 163/HMDV 163. Cognitive Development

Upper-Division Courses

LING 111. Phonetics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): LING 020. Practice in transcribing and recognizing sounds from many languages. Methods of transcribing and analyzing these sounds. Kronenfeld, Waltz

LING 121. Syntax. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): LING 020. Survey of various approaches to syntax, including transformational. Syntactic structures of English and other languages are examined. Applications: English, foreign languages, philosophy, mathematics. Kronenfeld, Waltz

LING 131. Morphology. (4)
Lecture, three hours; seminar, one hour. Prerequisite(s): LING 020, LING 111 or LING 121. Studies word structure, the lexical component of language, allomorphy, types of morphemes, inflectional and derivational morphology. Examines various theories of lexical/morphological organization in the brain. Examples are taken from English and other Indo-European languages. Levin.

LING 141. Phonology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): LING 111. Introduction to the study of functional sound units in speech, including phonotactics, morphophonemics. Various theories are examined, including generative. Applications: speech correction, speech analysis, English, foreign languages. Levin

LING 160 (E-Z). Topics in Dynamic and Comparative Linguistics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): LING 111, LING 121 or LING 141. Comparative analyses of language groups such as Spanish and Portuguese, Slavic languages, and Native American languages. E. Historical Linguistics; F. Dialectology; G. Language Change; I. Sociolinguistics.

LING 167. Structural/Descriptive Linguistics. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): LING 020 or consent of instructor. An overview from the original sources of the contribution of major figures and schools in linguistics from Saussure through early Chomsky. Cross-listed with ANTH 167. Kronenfeld

LING 190. Special Studies. (1-5)
To be taken with the consent of the chair of the Committee as a means of meeting special curricular problems. Course is repeatable.

LING 191. Seminar in Linguistics. (4)
Seminar, three hours; consultation, one hour. Selected topics in language and linguistics. Course may be repeated for credit up to 12 units.

LING 192. Tutorial Activities. (1-2)
Prerequisite(s): junior or senior standing and nomination by faculty. Enlarging understanding of linguistics through conducting tutorial sessions in introductory courses, under the supervision of faculty members responsible for the courses involved. The course will be graded on a Satisfactory (S) or No Credit (NC) basis and may be taken for a maximum of three quarters.

LING 195. Senior Thesis. (2-4)
Thesis, six to twelve hours. Prerequisite(s): senior standing or consent of instructor. Independent research and preparation of a thesis completed under the supervision of a faculty member. Course is repeatable to a maximum of 12 units. Levin

LING 195H. Senior Honors Thesis. (2-4)
Thesis, six to twelve hours. Prerequisite(s): invitation by faculty to pursue honors work in linguistics; senior standing or consent of instructor. Intensive study, research, and preparation of a thesis in consultation with a faculty member. Grades are deferred until presentation of the thesis at the end of the final quarter. Satisfactory (S) or No Credit (NC) grading is not available. To be taken during two or three successive quarters; course is repeatable to a maximum of 12 units. Levin

RELATED COURSES
Refer to departmental listings for course descriptions.

Anthropology
ANTH 120. Language and Culture
ANTH 123. Linguistic Anthropology
ANTH 165. Cognitive Anthropology
ANTH 259. Anthropological Linguistics

Education
EDUC 121. Language and Speech Development and Disorders
EDUC 201A. Theories and Processes of Reading

English
ENGL 112. History of the English Language

French (Comparative Literature and Foreign Languages)
FREN 104. Phonetics
FREN 220. Reading of Old French Texts

German (Comparative Literature and Foreign Languages)
GER 130. History of the German Language

Mathematics
MATH 144. Introduction to Set Theory

Philosophy
PHIL 125. Intermediate Logic
PHIL 126. Advanced Logic
PHIL 152. Philosophy of Language

Psychology
PSYC 110. The Brain and Behavior
PSYC 134. Cognitive Processes
PSYC 135/HMDV 135. Psycholinguistics
PSYC 163/HMDV 163. Cognitive Development

Russian
RUSN 150. Introduction to Slavic Languages
RUSN 182 (E-Z). Studies in Russian Grammar
RUSN 183 (E-Z). Studies in Slavic Languages

Spanish
SPN 105. Phonology of the Spanish Language
SPN 106A-SPN 106B. Structure of the Spanish Language
SPN 108. Hispanic Dialectology
SPN 207. History of the Spanish Language

German
GER 173. Germanic Studies
GER 183 (E-Z). Studies in German

Spanish
SPN 105. Phonology of the Spanish Language
SPN 106A-SPN 106B. Structure of the Spanish Language
SPN 108. Hispanic Dialectology
SPN 207. History of the Spanish Language

MAJOR

The B.S. degree in Computer Engineering is offered by the Departments of Computer Science and Engineering and of Electrical Engineering. The major encompasses a broad range of topics from both computer science and electrical engineering, including hardware and software, the design of computer systems, and their application. The degree includes a core of fundamental topics, primarily from the Departments of Electrical Engineering, and of Computer Science and Engineering. It also offers a wide spectrum of elective courses permitting specialization in one or two of the sub-disciplines of computer engineering. The major supports the growing industrial need for individuals trained in this particular range of topics but also prepares students for graduate study in Computer Engineering or related fields.

During their freshman year, all engineering students follow a common curriculum of mathematics and sciences. By the beginning of the sophomore year, students begin more specific course work toward their selected major.

Students enrolled in community college pre-engineering programs are expected to complete the equivalent of the first two years of UCR’s course work for engineering majors and to demonstrate strength in calculus, computer science, and physics. The Intersegmental General Education Transfer Curriculum (IGETC) does not meet transfer requirements for Engineering. The Marlan and Rosemary Bourns College of Engineering provides spe-
**Degree Requirements**

**University Requirements**

See the Undergraduate Studies Section for requirements that all students must satisfy.

**College Requirements**

See Degree Requirements, The Marian and Rosemary Bourns College of Engineering, in the Undergraduate Studies Section, for requirements that students must satisfy.

Courses used to fulfill the College requirements must be selected from an approved list available in The College Office of Student Affairs. To provide depth in satisfying breadth in the Humanities and Social Sciences, courses must meet the following criteria:

1. At least two of the Humanities and/or Social Science courses must be upper-division.
2. At least two courses must be from the same subject area (for example, two courses in History), with at least one of the two being an upper-division course.

The Computer Engineering major uses the following major requirements toward the satisfaction of some of The College's Natural Science and Mathematics breadth requirements:

- MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B, MATH 046
- CS 010, CS 012, CS 014, CS 061
- EE 001A, EE 001A, EE 001B
- PHYS 040A, PHYS 040B, PHYS 040C

**Major Requirements**

Major requirements for the B.S. in Computer Engineering are as follows:

1. Lower-division requirements (67 units):
   - MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B, MATH 046
   - CS 010, CS 012, CS 014, CS 061
   - EE 001A, EE 001A, EE 001B
   - PHYS 040A, PHYS 040B, PHYS 040C
   - One course of 4 or more units in Chemistry to be selected in consultation with a faculty advisor.

2. Upper-division requirements (83 units minimum):
   - MATH 112, MATH 113
   - STAT 155
   - CS 120A/EE 120A, CS 120B/EE 120B; one course from CS 122A or EE 128
   - CS 141, CS 161, CS 180; one course from CS 160 or CS 163
   - EE 100A, EE 100B, EE 110A, EE 110B, EE 141
   - Five courses as technical electives from the following list:
     - CS 141, CS 161, CS 180
     - PHYS 040A, PHYS 040B, PHYS 040C
     - EE 100A, EE 100B, EE 110A, EE 110B
   - The selection of technical electives must be planned, in consultation with a faculty advisor, to include at least one coherent sequence of two classes from either Computer Science and Engineering or Electrical Engineering. The technical electives must be distinct from those used to satisfy the upper-division requirements specified in items c) - e) listed previously.

Students may petition for exceptions to the above degree requirements. Exceptions to Computer Science course requirements must be approved by the Computer Science and Engineering undergraduate advisor or chair, and exceptions to Electrical Engineering course requirements must be approved by the Electrical Engineering undergraduate advisor or chair. Exceptions to other requirements require the approval of the undergraduate advisors or chairs of both departments.

<table>
<thead>
<tr>
<th>Sample Program</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<tbody>
<tr>
<td>Freshman Year</td>
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<tr>
<td>MATH 009A-MATH 009B-MATH 009C</td>
<td>4</td>
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<td>PHYS 040A, PHYS 040B</td>
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<td>ENGL 01A, ENGL 001A, ENGL 001B</td>
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<tr>
<td>Humanities/Social Sciences</td>
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<tr>
<td>Chemistry Elective</td>
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<tr>
<td>Total Units</td>
<td>16</td>
<td>17</td>
<td>17</td>
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</table>

| Sophomore Year                  |      |        |        |
| MATH 010A-MATH 010B             | 8    | 4      | 9      |
| MATH 046, MATH 112, MATH 113    |      |        |        |
| CS 014, CS 141                  | 4    | 4      | 4      |
| EE 001A, EE 001A, EE 001B       | 4    | 4      |        |
| PHYS 040C                       | 5    |        |        |
| Humanities/Social Sciences      | 4    |        |        |
| Biological Science Elective     | 4    |        |        |
| Total Units                     | 17   | 16     | 17     |

**COMPUTER SCIENCE AND ENGINEERING**

Subject abbreviation: CS

Department Office, A242 Bourns Hall
(909) 787-5639; http://www.cs.ucr.edu

**Professors**

- Laxmi Bhuyan, Ph.D.
- Marek Chrobak, Ph.D.
- Yu-Chin Hsu, Ph.D.
- Tao Jiang, Ph.D.
- Mart L. Molle, Ph.D.
- Teodor C. Przymusinski, Ph.D.
- Chinya Ravishankar, Ph.D.
- Satish K Tripathi, Ph.D.
- William R. Johnson, Ph.D.
- Family Chair in Engineering

**Graduate Students**

- Lawrence L. Larmore, Ph.D.
- Brett D. Fleisch, Ph.D.
- Yang-Chang Hong, Ph.D.
- Walid Najjar, Ph.D.
- Thomas H. Payne, Ph.D.
- Vassilis Tsotras, Ph.D.
- Frank N. Vahid, Ph.D.

**Assistant Professors**

- Michalis Faloutsos, Ph.D.
- Dimitrios Gunopulos, Ph.D.
- Srikantan Krishnamurthy, Ph.D.
- Scott R. Tilley, Ph.D.

**Adjunct Associate Professor**

- Halina Przymusinska, Ph.D.

**MAJOR**

The Department of Computer Science and Engineering offers a B.S. degree in Computer Science and an M.S. and a Ph.D. degree in Computer Science. These programs provide the basis for careers in research and development in the computer science field as well as...
technical and nontechnical related fields that are dependent on a working knowledge of computers.

The Computer Science major has been designed to provide the student with a broad background in science and humanities and to provide an understanding of fundamental principles of computing and modern computing technology. It prepares the student for professional work with computer systems as well as for graduate work in computer science.

The Intersegmental General Education Transfer Curriculum (IGETC) does not meet transfer requirements for Computer Science. Lower-division major preparation is stressed for transfer students.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements. The Marlan and Rosemary Bourns College of Engineering, in the Undergraduate Studies Section, for requirements that students must satisfy.

Courses used to fulfill the College requirements must be selected from an approved list available in The College Office of Student Affairs. To provide depth in satisfying breadth in the Humanities and Social Sciences, courses must meet the following criteria:

1. At least two of the Humanities and/or Social Science courses must be upper-division.
2. At least two courses must be from the same subject area (for example, two courses in History), with at least one of the two being an upper-division course.

The Computer Science major uses the following major requirements toward the satisfaction of some of The College’s Natural Sciences and Mathematics breadth requirements.

1. MATH 009A
2. PHYS 040A, PHYS 040B, PHYS 040C

Major Requirements

The major requirements for the B.S. in Computer Science are as follows:

1. Lower-division requirements (59 units)
   a) MATH 009A-MATH 009B-MATH 009C, MATH 010A, MATH 046
   b) CS 010, CS 012, CS 014, CS 061
   c) PHYS 040A, PHYS 040B, PHYS 040C
   d) One course of 4 or more units in Chemistry to be selected in consultation with a faculty advisor
   e) One course of 4 or more units in an engineering discipline outside the field of computer science to be selected in consultation with a faculty advisor. Either a lower- or an upper-division course may be used to satisfy this requirement.

2. Upper-division requirements (67 units)
   a) MATH 112, MATH 113
   b) STAT 155
   c) CS 120A/EE 120A, CS 120B/EE 120B
   d) CS 141, CS 150, CS 161, CS 163, CS 181, CS 182
   e) Twenty (20) units of technical electives to be chosen from an approved list of courses which currently includes MATH 120, MATH 135A-MATH 135B; CS 100, CS 121, CS 122A-CS 122B, CS 130, CS 133, CS 160, CS 164, CS 165, CS 166, CS 168, CS 170, CS 171, CS 177, CS 180, CS 183, CS 185, CS 193, EE 140

Minor

Requirements for the Minor in Computer Science are:

1. Prerequisite courses: CS 010, CS 012, MATH 009A-MATH 009B-MATH 009C, MATH 112
2. Core courses: CS 014, CS 061, CS 141
3. Three elective courses, each of four or more units, such that:
   a) Each is an upper-division requirement or a listed technical elective for the Computer Science major, excluding courses numbered 190-199;
   b) Only one quarter of any A-B sequence may be used;
   c) No course may be an upper-division requirement of the student’s major.

Note: Any courses required for the minor may be taken on a S/NC basis only on approval of the dean. Students with a minor in Computer Science must obtain approval from the undergraduate advisor in Computer Science and Engineering for a specific program of electives consistent with their career goals.

Education Abroad Program

The Department of Computer Science and Engineering encourages students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units toward graduation. Because strategy in choosing courses to be taken here and courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult the department advisor for assistance. For further details, see Education Abroad Program on the Curricula and Courses section.

GRADUATE PROGRAM

All applicants for graduate status must supply Graduate Record Examination scores for the general aptitude tests prior to their admission.

Master’s Degree

General requirements are listed in the Graduate Studies section of this catalog. Specific requirements for the M.S. in Computer Science in the Department of Computer Science and Engineering are as follows:

1. Satisfactory completion of the computer science breadth requirement by the end of the third quarter in graduate residence at UCR.
2. At least 36 units of approved lecture courses, including 20 units of core courses (CS 201, CS 202, CS 203, CS 215, and CS 218) and 16 units of elective courses at the graduate or upper-division level. At least one elective course must be taken at the graduate level.
3. A mandatory attendance of CS 287 (Colloquium in Computer Science) and 12 additional units of CS 260-269 (graduate seminars in Computer Science).
4. One of the following two options:
   a) Satisfactory completion of a thesis in a field of computer science to be chosen in consultation with a faculty advisor. The thesis shall be approved by a thesis committee designated by the Department. Students must register for thesis research, CS 299; a maximum of 8 units of CS 299 may be applied toward the 36-unit requirement of approved lecture courses listed above. Students may replace a core course with an approved graduate lecture course on the recommendation of the thesis advisor and approval by the thesis committee. Students must defend
Doctoral Degree

The course requirements are the same as those for M.S. students, except that (a) Ph.D. students cannot replace elective courses by units for CS 299, and (b) at least two elective courses must be taken at the graduate level. Ph.D. students must pass all core courses with a grade of "B" or better. Course requirements may be waived at the discretion of the graduate advisor for students holding the M.S. degree in Computer Science from other schools and who have taken the same or equivalent courses.

Additional requirements are as follows:

1. **Comprehensive Field Examinations.** All Ph.D. students must pass three comprehensive field examinations. Two of these examinations are in the core areas of (a) Computer Systems and (b) Algorithms and Theory of Computation. The third examination can be chosen from the current list of elective areas and needs to be approved by the graduate advisor. Ph.D. students must pass two field examinations at the Ph.D. level. A third one can be passed at the M.S. or Ph.D. level.

2. **Qualifying Examination.** The qualifying examination is given by the Doctoral Committee. It is designed to test the student's knowledge of the area of interest and to evaluate the student's ability to successfully conduct the research outlined in the prospectus.

   The exam consists of two parts. The first part is an oral examination in the area of research. The second part is an oral presentation of the research prospectus followed by questions from the members of the Doctoral Committee. The student must pass satisfactorily both parts of the qualifying examination.

   After passing the qualifying examination, the student is advanced to candidacy.

3. **Dissertation.** After being advanced to candidacy, the student can concentrate on research and on writing the Ph.D. dissertation. The Ph.D. dissertation should contain original and creative scholarly work and should be approved by the Doctoral Committee before the final oral examination.

4. **Final Oral Examination.** The student defends the dissertation in a final oral examination that consists of a public semi-nar followed by questions from the audience. After a satisfactory performance on the final oral examination, the Doctoral Committee recommends granting the Ph.D. degree.

   The normative time to the Ph.D. is 15 quarters.

### LOWER-DIVISION COURSES

**CS 008. Introduction to Computing. (4)** Lecture, three hours; laboratory, three hours. Prerequisite(s): none. Includes operating system basics (Windows and Unix), word processing, spreadsheets, data bases (e.g., Access), e-mail, the Internet, and the World Wide Web. Designed for students not majoring in computer science, engineering, mathematics, or science. Credit is awarded for only one of CS 008 or STAT 150. Credit is not awarded for CS 008 if it has already been awarded for CS 010.

**CS 010. Introduction to Computer Science for Science, Mathematics, and Engineering I. (4)** Lecture, three hours; laboratory, three hours. Prerequisite(s): MATH 009A (may be taken concurrently). Solving problems through structured programming of algorithms on computers, using the C++ object-oriented language. Topics include variables, expressions, input/output (I/O), branches, loops, functions, parameters, arrays, strings, file I/O, and classes. Also covers software design, testing, and debugging.

**CS 012. Introduction to Computer Science for Science, Mathematics, and Engineering II. (4)** Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 010 with a grade of "C-" or better; familiarity with C or C++ language. Structured and object-oriented programming in C++, emphasizing good programming principles and development of substantial programs. Topics include recursion, pointers, linked lists, abstract data types, and libraries. Also covers software engineering principles.

**CS 014. Data Structures. (4)** Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 012 with a grade of "C-" or better; familiarity with C or C++ language. Structured and object-oriented programming in C++, emphasizing good programming principles and development of substantial programs. Topics include recursion, pointers, linked lists, abstract data types, and libraries. Also covers software engineering principles.

**CS 020. Web Site Construction. (4)** Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 010. An introduction to web site design, deployment, management, and evolution. Topics include creation; graphics and streaming media; CSS; HTML and Dynamic HTML; SMIL; XML; Java and JavaScript; VB Script; DOM; World Wide Web Consortium; servers and applets; CGI; bandwidth; ISP; security and log files; electronic commerce; standards; user interfaces and human-computer interaction.

**CS 061. Machine Organization and Assembly Language Programming. (4)** Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 010. An introduction to computer architecture, to include the topics of binary, decimal, and hexadecimal numbering systems; register transfer and computer operations; computer instructions and addressing modes; memory organization; interrupt and trap processing; input/output (I/O) and communications; assembly language programming; basic data structures; assembler directives, macros, procedures, and system calls; high-level language interfaces; assemblers, linkers, and debuggers; and simulating high-level languages in assembly language.

### UPPER-DIVISION COURSE

**CS 100. Software Construction. (4)** Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 014. Development and construction of software products. Topics include design, coding layout, and style; implementation strategies; quality attributes; prototyping, reuse, and components; debugging, testing, and performance; integration and maintenance, documentation; standards, analyses, and selection of tools and environment; and personal software processes.

**CS 120A. Logic Design. (5)** Lecture, three hours; laboratory, six hours. Prerequisite(s): CS 010. Number systems and binary codes. Boolean algebra. Digital circuits. Combinational and sequential logic design principles and practices. Combinational and sequential programmable logic devices. Computer-aided design (CAD) and engineering of digital systems. Cross-listed with EE 120A.

**CS 120B. Introduction to Embedded Systems. (5)** Lecture, three hours; laboratory, eight hours. Prerequisite(s): CS 120A/EE 120A. A study of design methodology and digital systems at the register and processor level. Topics include arithmetic processors, microprocessor architecture, memory, input/output (I/O) support, and peripherals. Studies digital to analog (D/A) and analog to digital (A/D) converters, serial and parallel data transmission, memory access, and microprocessor-based digital systems. Cross-listed with EE 121B.

**CS 122A-CS 122B. Embedded System Design. (5-5)** Lecture, three hours; laboratory, six hours. Prerequisite(s): CS 120B/EE 120B. Covers design and use of embedded systems. Topics include interfacing central processing units with intelligent peripheral devices; real-time constraints on system design; hardware and software codesign techniques; and interfacing systems with real-world devices.

**CS 130. Computer Graphics. (4)** Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 120B/EE 120B. Top-down design methodology; hardware description languages, functional-level simulation, partitioning; high-level synthesis, finite state machine synthesis, logic synthesis, placement and routing, timing simulation, testing, rapid prototyping using field-programmable gate arrays.

**CS 122A-CS 122B. Embedded System Design. (5-5)** Lecture, three hours; laboratory, six hours. Prerequisite(s): CS 120B/EE 120B. Covers design and use of embedded systems. Topics include interfacing central processing units with intelligent peripheral devices; real-time constraints on system design; hardware and software codesign techniques; and interfacing systems with real-world devices.

**CS 130. Computer Graphics. (4)** Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 121, CS 122. A study of the fundamentals of computer graphics necessary to design and build graphics applications. Examines raster graphics algorithms including scan-converting graphics primitives, anti-aliasing, and clipping. Also covers geometric transformations, viewing, solid modeling techniques, and hidden-surface removal algorithms, color models, illumination, and shading. Individual and group projects are assigned.
CS 133. Computational Geometry. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 141, MATH 013, or equivalents. Introduction to the design of geometry algorithms. Covers the basic computational geometry concepts and techniques used in graphic, robotics, and engineering design. Topics include polygons and polytopes, convex hulls, and Voronoi diagrams.

CS 141. Algorithms. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 014 with a grade of "C-" or better; MATH 09HC or MATH 09H; MATH 112. Topics include trees and tree traversal; graphs and graph algorithms including searching, connectivity, shortest paths, minimum spanning trees, and maximum flow; algorithm design techniques including divide and conquer and dynamic programming; linear programming; heuristic techniques; NP-completeness; classic problems including traveling salesman, graph coloring and knapsack. Includes programming assignments that integrate knowledge of data structures and algorithms.

CS 143. Multimedia Technologies and Programming. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 010 or knowledge of an object-oriented or first-generation (scripting) programming language, for example C++, Perl, Prolog, Smalltalk, Lisp, OpenScript, ScriptX. Introduces multimedia technologies and programming techniques, multimedia hardware devices, authoring languages and environments, temporal and nonsequential media (interactivity in text, graphics, audio, video, animation), applications, and trends. A term project is required. Cross-listed with EE 143.

CS 150. The Theory of Automata and Formal Languages. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CS 014. A study of formal grammars, finite-state automata, push-down automata, Turing machines, time- and space-bounded Turing machines, semantics of programming languages, elements of recursive function theory and complexity of computation.

CS 160. Concurrent Programming and Parallel Systems. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 014, CS 061. Study of concurrent and parallel system design and implementation, scheduling, multiprocessor architecture and design, interprocess communication, synchronization, failures and persistence, concurrency control, atomic transactions, recovery, language support, distributed interprocess communication, and implementation mechanisms. Provides preparation for the study of operating systems, data bases, and computer networking.

CS 161. Design and Architecture of Computer Systems. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 061, CS 128B/EE 128B. Study of fundamentals of computer design. Topics include cost and performance trade-offs, instruction set design and measurement of use, processor implementation techniques, pipelining, pipeline hazards and control, memory hierarchy, and input/output (1/0) sytems. Students complete a design project.

CS 163. Design of Operating Systems. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 161. Programming proficiency (e.g., satisfactory completion of CS 012), CS 014, CS 061, CS 141 (CS 141 may be taken concurrently). Principles and practices of operating system design, including concurrency, memory management, file systems, protection, security, command languages, scheduling, and topics in system performance. Course project involves design and implementation of timeshared operating-system kernel.

CS 164. Computer Networks. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 141. Fundamentals of computer networks. Topics include layered network architecture, communication protocols, local area networks, UNIX network programming, verification, and performance studies.

CS 165. Computer Security. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 141, CS 163. Examines the ways in which information systems are vulnerable to security breaches. Topics include attacks; security labels, lattices, and policies; safeguards and countermeasures; intrusion detection; authorization and encryption techniques; networks; digital signatures, certificates, and passwords; privacy issues, firewalls, and spoofing. Trojan horses and computer viruses; CERT Coordination Center; and electronic commerce.

CS 166. Data Base Management Systems. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 014. Topics include architecture of data base management systems; relational, network, and hierarchical models; distributed data base concepts; query languages; implementation issues; and privacy and security of the data base.

CS 168. Introduction to Very Large Scale Integration (VLSI) Design. (5)
Lecture, three hours; laboratory, six hours. Prerequisite(s): CS 120A/EE 120A or consent of instructor. Basic electrical properties of metal-oxide-semiconductor (MOS) circuits. MOS circuit design processes. Basic circuit concepts. Subsystem design and layout. Aspects of system design. Memory, registers, and aspects of systems timing. Very large scale integration design.

CS 170. Introduction to Artificial Intelligence. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 014 or equivalent. Introduction to fundamental problems underlying the design of intelligent systems and to one of the languages of artificial intelligence such as Prolog or LISP. Topics include brute force and heuristic search, problem solving, knowledge representation, predicates and logical inference, frames, semantic networks, natural language processing, and expert systems.

CS 171. Introduction to Expert Systems. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CS 170 or equivalent. Introduction to methodology of design and implementation of expert systems. Rule-based and frame-based expert systems. Knowledge acquisition and knowledge engineering. Design of expert system shells. Use of expert system shells to construct knowledge-based systems.

CS 177. Modeling and Simulation. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 012 or familiarity with C++ or consent of instructor; CS 014 or consent of instructor; MATH 009A-MATH 009B-MATH 090C or MATH 09HA-MATH 09HB-MATH 09HC. Topics include validation of random number sequences; concepts in modeling and systems analysis; and conceptual models and their mathematical and computer realizations. Examines simulation modeling techniques including object-oriented modeling, and discrete-event modeling. Emphasis is on the use of simulation libraries used with programming languages such as C++. A term project consisting of the development, computer implementation, and analysis of a model is required.

CS 180. Introduction to Software Engineering. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 141. A study of software engineering techniques for the development, maintenance, and evolution of large software systems. Topics include requirements and specification; system design and implementation; debugging, testing, and quality assurance; reengineering; project management; software process; tools; and environments.

CS 181. Principles of Programming Languages. (4)
Lecture, three hours; laboratory three hours. Prerequisite(s): CS 061, CS 141 (CS 141 may be taken concurrently). CS 150. Principles of programming language design. Study and comparison of several programming languages, their features, and their implementations.

CS 182. Compiler Design. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 181. Fundamentals of compiler design, including lexical analysis, parsing, semantic analysis, compile-time memory organization, run-time memory organization, code generation, and compiler portability issues. Project involves design and implementation of a compiler for a simple block-structured language using appropriate compiler generation tools.

CS 183. UNIX System Administration. (4)
Seminar, three hours; laboratory, three hours. Prerequisite(s): CS 141. Technical aspects of system administration on a Unix system including advanced Unix, managing system devices, operating system installation, communications, and networking.

CS 185. Commercial Software Development. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 141. Topics include software design, development, testing, documentation, maintenance, marketing, and production, with an emphasis on the economic impact of decisions in the development phase. Also examines software piracy, copyrights, patents, and similar issues. Students develop, test, and market a commercial-quality piece of software.

CS 190. Special Studies. (1-5)
Prerequisite(s): consent of instructor. To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems.

CS 191 (E-Z). Seminar in Computer Science. (1-4)
Prerequisite(s): consent of instructor. Consideration of current topics in computer science.

CS 193. Design Project. (1-4)
Laboratory, one to six hours; scheduled research, one to three hours; individual study, one to three hours. Prerequisite(s): CS 141; consent of instructor. Individual hardware or software design project to include establishment of objectives and criteria, synthesis, analysis, implementation, testing, and documentation. Course is repeatable to a maximum of 8 units.

CS 194. Independent Reading. (1-4)
Prerequisite(s): consent of instructor. Independent reading in material not covered in course work. Normally taken in senior year. Total credit for CS 194 may not exceed 8 units.

CS 1981. Individual Internship in Computer Science. (1-4)
Internship, three to twelve hours. Prerequisite(s): upper-division standing; at least 12 units in Computer Science courses. An academic internship to provide the student...
with career experience as a computer scientist in a government, industrial, or research unit under the joint supervision of an off-campus sponsor and a faculty member in Computer Science. Each individual program must have the prior approval of both supervisors and the Department chair. A final written report is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

**GRADUATE COURSE**

**CS 201. Compiler Construction. (4)**
Lecture, three hours; research, three hours. Prerequisite(s): CS 182. Theory of parsing and translation. Compiler construction, including lexical analysis, syntax analysis, code generation, and optimization.

Lecture, three hours; outside research, three hours. Prerequisite(s): CS 163. Recent developments in operating systems. Multiprogramming, parallel programming, time-sharing, scheduling and resource allocation, and selected topics.

**CS 203. Advanced Computer Architecture. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): CS 161. Contemporary computer systems architecture including stack computer, parallel computers, pipeline processing, database machines, and multiprocessor architecture. Performance evaluation.

**CS 204. Advanced Computer Networks. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): CS 014, CS 164. Advanced topics in computer networks, layering, Integrated Services Digital Networks (ISDN), high-speed networks, performance models, and analysis, distributed systems and data base, case studies.

**CS 205. Artificial Intelligence. (4)**
Lecture, three hours; discussion, one hour. Prerequisite(s): CS 170 or equivalent. Knowledge representation and automated reasoning and their use in capturing common sense and expert knowledge. Predicate and nonmonotonic logics. Resolution and term rewriting. Reasoning under uncertainty. Theory provers, planning systems, and belief networks. Special topics include natural language processing, perception, logic programming, expert systems, deductive data bases.

**CS 213. Parallel and Distributed Processing. (4)**
Lecture, three hours; discussion, one hour. Prerequisite(s): CS 161 or equivalent. Parallel programming languages. Pipelining and supercomputing. Multiprocessing control, scheduling, and algorithms. Dataflow computing including models of computation, languages, and architectures. Very large scale integration (VLSI) computing structures including systolic/wavefront array processors, mapping algorithms, and reconfigurable processor arrays.

Lecture, three hours; outside research, three hours. Prerequisite(s): CS 150. Phrase structure grammars and languages. Turing machines. Relation of languages to automata. Solvable and unsolvable problems. Theoretical limitations of computers. Algorithmic complexity theory. Polynomial reducibility. The classes P and NP. Correctness proofs.

**CS 218. Design and Analysis of Algorithms. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): CS 014, MATH 131. Study of efficient data structures and algorithms for solving problems from a variety of areas such as sorting, searching, selection, linear algebra, graph theory and computational geometry. Worst-case and average-case analysis using recurrence relations, generating functions and other methods. Upper and lower bounds.

**CS 220. Silicon Compilation. (4)**
Lecture, three hours; scheduled research, three hours. Prerequisite(s): graduate standing. Emphasizes the synthesis and simulation of a digital system. Synthesis section covers recent progress in automatic synthesis on system level, Register Transfer Level (RTL), and logic level. Simulation section discusses the simulation model for the two most popular simulation languages: VHDL and Verilog.

**CS 235. Data Mining Techniques. (4)**
Lecture, three hours; term paper, one and a half hours; project, one and a half hours. Prerequisite(s): CS 141, CS 166; CS 170 is recommended. Provides students with a broad background in the design and use of data mining algorithms and tools. Topics include clustering, classification, association rules mining, time series clustering, and Web mining.

**CS 236. Data Base Management Systems. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): CS 014, CS 163 or equivalent, CS 166; or consent of instructor. Principles of file systems, architecture of data base management systems, data models, relational data bases, logical and physical design of data bases, hardware and software implementation of database systems, distributed data bases (query processing, concurrency, recovery).

**CS 237. Advanced Topics in Modeling and Simulation. (4)**
Lecture, three hours; scheduled research, three hours. Prerequisite(s): CS 177. Formal computer simulation models, such as Discrete Event Specified Models and differential equation models. Current developments in simulation languages. Integrated model development and applications to complex, large-scale problems.

**CS 260. Seminar in Computer Science. (1-4)**
Seminar, one to four hours. Prerequisite(s): graduate standing. Seminar on current research topics in Computer Science. Course is repeatable.

Seminar, four hours. Prerequisite(s): graduate standing or consent of instructor. A review of recent research topics in the fields of artificial intelligence and logic programming with a particular emphasis on expert systems, automated reasoning, and knowledge representation.

**CS 262. Algorithms and Data Structures. (4)**
Seminar, four hours. Prerequisite(s): CS 218, CS 215A; or consent of instructor. Selected topics in theoretical computer science. Course is repeatable.

**CS 263. Seminar in Distributed Systems. (4)**
Seminar, four hours. Prerequisite(s): graduate standing. CS 163 or previous operating systems course. A project-oriented course that introduces students to the fundamental topics in distributed computer systems and provides practical experience. Topics include distributed file systems, replicated data, load management, and distributed shared memory.

**CS 265. Seminar in Parallel Computer Architectures. (4)**
Seminar, four hours. Prerequisite(s): graduate standing or consent of instructor. Focuses on the problems of building a general purpose, massively parallel architecture.

Discusses proposed solutions to the problems of massive-parallel architectures, including implementation and compilation. Covers the recent progress made in the field.

**CS 267. Seminar in Data Bases. (4)**
Seminar, four hours. Prerequisite(s): CS 236 or consent of instructor. Focuses on recent research and development issues in the data base area such as object-oriented data bases, heterogeneous data bases, parallel data bases, benchmarks, transaction processing, query optimization, and performance evaluation.

**CS 268. Seminar in Computer-Aligned Design and Design Automation. (4)**
Seminar, four hours. Prerequisite(s): graduate standing or consent of instructor. Emphasizes recent research in automatic synthesis of digital systems. Covers recent progress and results in the synthesis of digital systems in the systems level, register transfer level, logic design level, and physical design.

**CS 269. Software and Hardware Engineering of Embedded Systems. (4)**
Seminar, four hours. Prerequisite(s): CS 120A/EE 120A; consent of instructor. Presents state-of-the-art software and hardware design techniques for embedded computing systems. Topics include specification models, languages, simulation, partitioning algorithms, estimation methods, model refinement, and design methodology.

**CS 287. Colloquium in Computer Science. (1)**
Colloquium, one hour. Prerequisite(s): graduate standing. Lectures on current research topics in computer science presented by faculty members and visiting scientists. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**CS 290. Directed Studies. (1-6)**
Seminar, one to six hours. Prerequisite(s): consent of instructor. Research and special studies in computer science. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**CS 297. Directed Research. (1-6)**
Individual study, three to eighteen hours. Prerequisite(s): graduate standing. Directed research on selected problems in computer science under the sponsorship of specific faculty members. Graded Satisfactory (S) or No Credit (NC).

**CS 298-I. Individual Internship. (1-12)**
Written report, one to twelve hours; internship, two to twenty-four hours. Prerequisite(s): graduate standing or consent of instructor. Individual apprenticeship in computer science. Includes fieldwork with an approved professional individual or organization, and academic work under the direction of a faculty member. A final written report is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to maximum of 12 units.

**CS 299. Research for Thesis or Dissertation. (1-12)**
Individual study, three to thirty-six hours. Prerequisite(s): graduate standing and consent of instructor. Research in computer science under the direction of a faculty member. This research is to be included as part of the thesis or dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.
clarify their academic and career objectives. Professional acquaintances established during internships can continue to serve as important contacts for students after the internship is completed.

Degree Requirements

University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements College of Natural and Agricultural Sciences in the Undergraduate Studies section for requirements that students must satisfy.

Some of the following requirements for the major may also fulfill some of the College's breadth requirements. Consult with a faculty advisor for course planning.

Major Requirements

The major requirements for the B.S. degree in Conservation Biology are as follows:

1. Life Sciences core curriculum (65-68 units)
   a) BIOL 005A-BIOL 005B-BIOL 005C
   b) PHYS 002A-PHYS 002B-PHYS 002C
      PHYS 021A-PHYS 021B-PHYS 021C
   c) CHEM 001A-CHEM 001B-CHEM 001C
   d) MATH 009A-MATH 009B
   e) CHEM 112A-CHEM 112B-CHEM 112C
   f) BCH 100 or BCH 110A
   g) STAT 020, STAT 100A or STAT 120A

2. Additional lower-division requirements (8 units)
   a) ENSC 006/ECON 006
   b) GEO 002

3. Upper-division requirements (53-60 units)
   a) BIOL 102
   b) ENSC 172
   c) Breadth Electives: Courses in the disciplines important in Conservation Biology. One course from each of the following areas:
      (1) Evolution. BIOL 105, BIOL 108
      (2) Ecology. BIOL 117, BIOL 127/ENTM 127, BPSC 146
      (3) Systematics. ENTM 112/BIOL 112/BPSC 112, BPSC 144
      (4) Biodiversity. BIOL 151, BIOL 163, BPSC 130/BIOL 130, ENTM 100/
         BIOL 100, ENTM 109,
   PLPA 134/BIOL 134 and
   PLPA 134I/BIOL 134I, or other appropriate course that includes a
   laboratory and is approved by a faculty advisor.
   (5) Abiotic and Landscape Studies.
      ENSC 100, GEO 160, GEO 162,
      GEO 168A
   (6) Applications. BPSC 122/BIOL 142,
      ENTM 124, ENTM 129, GEO 167
   (7) Human Issues. ANTH 110,
      ANTH 129, ANTH 132, ANTH 134,
      ECON 143A/ENSC 134A,
      ECON 143B/ENSC 143B, PHIL 117,
      SOC 184
   d) Specialization. 12 units of upper-division and/or substantive courses in an area of specialization chosen by the student in consultation with a faculty advisor.
   Only the following 190 series can be included in the specialization. No more than 4 units of BLCN 197/199 may be included, and BLCN 190 may be applied when used to study graduate level material.
   e) Conservation Internship Program.
      BLCN 198-I (Minimum of 2 units).
   f) Conservation Biology Seminar. BLCN 193 must be taken once.

Sample Program

Freshman Year

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Conservation Biology / Creative Writing / 185

**UPPER-DIVISION COURSES**

**BLCN 190. Special Studies (1-4)**  
Individual study, three to twelve hours. Prerequisite(s): consent of instructor and Program Chair. To be taken as a means of meeting special curricular needs. Course content, style, requirements, and grading basis is selected in consultation with the instructor and Program Chair. Course is repeatable to a maximum of 12 units.

**BLCN 193. Senior Seminar. (4)**  
Seminar, four hours. Prerequisite(s): senior standing in Conservation Biology or consent of instructor. A synthesis course which integrates previous upper-division course work by investigating current research topics in conservation biology in a seminar and discussion format. Includes presentations by faculty, students, and invited speakers. Graded Satisfactory (S) or No Credit (NC).

**BLCN 197. Research for Undergraduates. (1-2)**  
Research, three to six hours. Prerequisite(s): sophomore, junior, or senior standing in Conservation Biology; consent of instructor and Program Chair. An introduction to research providing the opportunity, through reading and preliminary laboratory work, to develop a research project suitable for BLCN 199. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units.

**BLCN 198. Individual Internship in Conservation Biology. (2-4)**  
Internship, six to twelve hours; consultation, one hour; outside reading, two to four hours. Prerequisite(s): upper-division standing in Conservation Biology. An off-campus practical experience in the public or private sector related to conservation biology that is conducted under the joint supervision of an off-campus sponsor and a faculty mentor from the Conservation Biology Program. A written research report is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

**BLCN 199. Senior Research. (1-4)**  
Laboratory, three to twelve hours. Prerequisite(s): junior or senior standing in Conservation Biology; consent of instructor and Program Chair. BLCN 197 is recommended. Research in conservation biology performed under the supervision of a faculty member in the Conservation Biology Program. A written research report is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

**CREATIVE WRITING**

**Subject abbreviation: CRWT**

Christopher Buckley, M.F.A., Chair
Department Office, 2116 W atkins
(909) 787-5312
http://www.chass.ucr.edu/creative_writing/

**Professors**  
Christopher Buckley, M.F.A.  
Maurya Simon, M.F.A.  
Gary A. Soto, M.F.A.  
Susan C. Straight, M.F.A.

**Professors Emeriti**  
Elid Martinez, Ph.D.  
Stephen Minot, M.A.

**Lecturers**  
Judy Z. Kronenfeld, Ph.D.  
Frances H. Connolly, Ph.D.

**MAJOR**

The Creative Writing major offers a series of workshop courses in poetry, fiction, playwriting, screenwriting, and nonfiction as well as reading courses in poetry and fiction presented from a writer's point of view. They are taught for the most part by poets, fiction writers, and playwrights.

The major consists of 12 units of lower-division courses, 60 units of upper-division courses, and 24 units of concentration in a subject of student choice approved by the Creative Writing Chair or advisor.

The writing courses are taught as workshops, so that the subject matter (the students' stories, poems, and plays) is different each time the course is offered.

**Degree Requirements**

**University Requirements**

See the Undergraduate Studies section for requirements that all students must satisfy.

**College Requirements**

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

**Major Requirements**

The major requirements for the B.A. degree in Creative Writing are as follows:

Prerequisites courses: CRWT 056 or equivalent, and ENGL 001A or equivalent.

1. Lower-division requirements (12 units)  
   Three (3) lower-division literature surveys:
   - ENGL 014- Major American Writers
   - ENGL 015- Modern Literature
   - ENGL 023A-ENGL 023B-ENGL 023C- English Literary Traditions
   - ENGL 031- American Literary Traditions
   - ENGL 032- Twentieth-Century Literature
   - WRLT 017A-WRLT 017B-WRLT 017C- Masterworks of Western Literature, or course approved by instructor

2. Upper-division requirements (60 units)
   a) Three (3) workshop courses in genre of interest
      - **Poetry**  
        CRWT 150- Beginning Poetry Workshop  
        CRWT 160- Intermediate Poetry Workshop  
        CRWT 170- Advanced Poetry Workshop
      - **Fiction**  
        CRWT 152- Beginning Fiction Workshop  
        CRWT 162- Intermediate Fiction Workshop  
        CRWT 172- Advanced Fiction Workshop
   b) One (1) workshop in second genre:  
      - CRWT 150, CRWT 152, CRWT 160, CRWT 162, CRWT 164A/THEA 164A, CRWT 164B/THEA 164B, or CRWT 166
   c) Three (3) upper-division courses in Creative Writing:  
      - CRWT 171- Anatomy of Poetry  
      - CRWT 187/WRLT 187- Metaphiction
      - CRWT 176 (E-Z) - Special Topics
   d) One (1) upper-division course in Art, Art History, Music, Dance, or Theatre
   e) Four (4) units of CRWT 195H Senior Thesis, or approved course
   f) Six (6) upper-division courses of concentration in another discipline or set of disciplines approved by advisor

**Minor**

1. Lower-division requirements (8 units)
   a) One (1) introductory writing workshop: CRWT 056

2. Upper-division requirements (20 units)
   a) Four (4) units from
      - (1) CRWT 176 (E-Z)
      - (2) Any upper-division course in English, Comparative Literature and Foreign Languages, or Theatre (except ENGL 101, ENGL 103; FREN 100, FREN 101A-FREN 101B-FREN 101C, FREN 104; GER 102, GER 103A-GER 103B; RUSN 103; SPN 101A-SPN 101B-SPN 101C, SPN 105, SPN 106A-SPN 106B, SPN 108)
b) Sixteen (16) units in one of the following emphases:

**Poetry Emphasis**
(1) CRWT 150, CRWT 160, CRWT 170
(2) Four (4) units from CRWT 162, CRWT 165, CRWT 166A/FVC 166A/THEA 166A, CRWT 171, CRWT 187/WRBT 187

**Drama Emphasis**
(1) CRWT 164A/THEA 164A, CRWT 164B/THEA 164B, CRWT 164C/THEA 164C
(2) Four (4) units from CRWT 160, CRWT 162, CRWT 165, CRWT 166A/FVC 166A/THEA 166A, CRWT 166B/FVC 166B/THEA 166B, CRWT 166C/FVC 166C/THEA 166C, CRWT 187/WRBT 187, THEA 121 (E-Z)

**Fiction Emphasis**
(1) CRWT 152, CRWT 162, CRWT 172
(2) Four (4) units from CRWT 160, CRWT 164A/THEA 164A, CRWT 165, CRWT 166A/FVC 166A/THEA 166A, CRWT 166B/THEA 166B, CRWT 187/WRBT 187

**UPPER-DIVISION COURSES**

**CRWT 150. Beginning Poetry Workshop. (4)**
Workshop, three hours; outside research, three hours. Prerequisite(s): CRWT 056 or consent of instructor. Students write poetry which is analyzed by the class. Substantial original work and outside reading are required.

**CRWT 152. Beginning Fiction Workshop. (4)**
Workshop, three hours; outside research, three hours. Prerequisite(s): CRWT 056 or consent of instructor. Students discuss and analyze outside texts and original work from the class. Substantial original work is required.

**CRWT 160. Intermediate Poetry Workshop. (4)**
Workshop, three hours; outside research, three hours. Prerequisite(s): CRWT 056, CRWT 152, or consent of instructor. Class work consists of intensive analysis of students’ work. Course is repeatable to a maximum of 8 units.

**CRWT 162. Intermediate Fiction Workshop. (4)**
Workshop, three hours; outside research, three hours. Prerequisite(s): CRWT 056, CRWT 152, or consent of instructor. Class work consists of intensive analysis of students’ work. Course is repeatable to a maximum of 8 units.

**CRWT 164A. Beginning Playwriting. (4)**
Seminar, three hours; discussion, one hour. Prerequisite(s): THEA 100 or CRWT 056 or consent of instructor. Seminar in the practice of playwriting centering on the construction of a plot. Cross-listed with THEA 164A Morton

**CRWT 164B. Intermediate Playwriting. (4)**
Seminar, three hours; discussion, one hour. Prerequisite(s): CRWT 164A/THEA 164A. Seminar in the practice of playwriting. Revisions of works in progress with emphasis on character development and techniques for writing dialogue. Cross-listed with THEA 164B Morton

**CRWT 165A. Advanced Poetry Workshop. (4)**
Workshop, three hours; outside research, three hours. Prerequisite(s): CRWT 164A/THEA 164A or consent of instructor. Advanced production and postproduction of full-length plays for stage, television, or video. Postproduction of previously taped shows. Course is repeatable to a maximum of 8 units. Cross-listed with THEA 165A.

**CRWT 167A. Plays in Production. (4)**
Workshop, eight hours. Prerequisite(s): CRWT 167A/THEA 167A or consent of instructor. Development and production of half-hour or one-hour plays written specifically for stage, television, or multimedia broadcasting. Students learn the basics of sound and video production to enhance their writing and rewriting process. Course is repeatable to a maximum of 8 units. Cross-listed with THEA 167A.

**CRWT 167B. Plays in Production. (4)**
Workshop, eight hours. Prerequisite(s): CRWT 167A/THEA 167A or consent of instructor. Development and production of half-hour or one-hour plays written specifically for stage, television, or multimedia broadcasting. Students learn the basics of sound and video production to enhance their writing and rewriting process. Course is repeatable to a maximum of 8 units. Cross-listed with THEA 167B.

**CRWT 170. Advanced Poetry Workshop. (4)**
Workshop, three hours; outside research, three hours. Prerequisite(s): CRWT 152, CRWT 162, CRWT 170; or consent of instructor. A workshop in poetry writing for students who wish to attempt, with criticism from class members, to fashion a significant long poem or group of poems. Course is repeatable.

**CRWT 171. Anatomy of Poetry. (4)**
Lecture, three hours; creative writing, three hours. Prerequisite(s): CRWT 160 or consent of instructor. An introductory study of poetics, including traditional and contemporary forms. Students write in the various poetic forms studied.

**CRWT 172. Advanced Fiction Workshop. (4)**
Workshop, three hours; outside research, three hours. Prerequisite(s): CRWT 056, CRWT 152, CRWT 162, or consent of instructor. A workshop in fiction writing for
students who wish to attempt, with criticism from class members, to fashion a collection of stories or a novel. Course is repeatable.

CRWT 175. Advanced Writing for Journalists. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CRWT 165 or consent of instructor. An examination of the techniques and styles representative of modern feature journalism. Writing assignments incorporate advanced reporting skills.

CRWT 176 (E-Z). The Craft of Writing. (4)
Lecture, three hours; extra reading, one hour; practice writing, two to three hours. Prerequisite(s): upper-division standing or consent of instructor. A formal study and practice of the craft of writing, its technical aspects and development through the contemporary period in the genres of poetry, fiction, playwriting, screenwriting, and journalism.

CRWT 187. Metafiction. (4)
Lecture, three hours; creative writing or term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Postmodernism, metafiction, and the novel in Europe and America. Creative writers submit fiction in lieu of a term paper. Cross-listed with WRIT 187.

CRWT 190. Special Studies. (1-5)
To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems.

CRWT 191. Seminar in Creative Writing. (4)
Seminar, three hours; extra reading, three hours. Prerequisite(s): consent of instructor; upper-division standing. Intense study of the work of a visiting writer and poet. Students prepare individual papers for discussion. Minot

CRWT 195H. Senior Honors Thesis. (4)
Consultation, one hour; outside research, four hours; extra reading, three hours; thesis, four hours. Prerequisite(s): consent of Department Chair. The student works independently with a faculty member to prepare a project. For the Creative Writing major, the project may be a group of poems, a long poem, a group of short stories, a novel, or a part of a novel. For the Journalism minor, the project may be a news feature, an investigative article, or a similar story requiring significant endeavor in reporting and writing and demonstrating an understanding of sound journalistic technique.

CRWT 198. Individual Internship. (1-12)
Field, two hours per unit. Prerequisite(s): consent of instructor; upper-division standing. Work with an appropriate professional individual or organization to gain experience and skills in any form of writing which meets with the approval of the Creative Writing Chair (e.g., journalism, radio journalism). Letter grading or Satisfactory (S) or No Credit (NC). Repealtable to 16 units.

Majors

The Bachelor of Arts degree in Dance offered by the UCR Department of Dance focuses on modern dance choreography, technique and performance, history, anthropological and pedagogical techniques. Course techniques are offered in modern dance, ballet, and tap as well as social dance forms as they are practiced in various cultures of the world. Dance majors are required to participate in at least one production per season. UCR is Dancing the Department's annual concert series featuring original choreography and performance projects by students. This concert series also includes historical dance reconstructions by Department faculty, and performances by professional guest artists. The dance major is distinctive for its outstanding faculty of nationally recognized scholars and artists who draw from a variety of academic and creative backgrounds, including choreography, history, literature, anthropology, performance studies, and cultural studies.

In addition, visiting professional dancers, choreographers, and scholars come to UCR frequently to give special workshops, master classes, and lectures.

Opportunities to perform include UCR's Dancing performances in the Dance Studio Theatre, and community programming with the Touring Ensemble.

New majors are eligible to audition for the Chancellor's Performance Award, a scholarship of up to $4,500. Student assistantships and other forms of financial aid are also available. Undergraduate majors may apply for research grants and stipends for summer dance studies. Selected students receive $1,000 Maxwell H. Gluck Fellowships.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The major requirements for the B.A. degree in Dance are as follows: Sixty-six (66) units of course work in Dance, 36 of which are upper-division.

1. Choreography, performance, and pedagogy series:
   - DNCE 014, DNCE 114A, DNCE 114B, DNCE 114C, DNCE 167, DNCE 180G, DNCE 180R
2. History, anthropology, and movement analysis series:
   - DNCE 120, DNCE 130/ANTH 130, DNCE 141, DNCE 142
3. Dance technique series:
   a) Eighteen (18) units from DNCE 067A, DNCE 067B, DNCE 067C
   b) Six (6) units from DNCE 071A-DNCE 075B

Minor

The student who minors in Dance may pursue one of two options, each designed to provide a coherent introduction to the study of dance as an art form.
Option I — emphasizes choreography and performance. Twenty-eight (28) units are required as follows:
1. Lower-division requirements (12 units)
   a) DNCE 014
   b) Six (6) units of DNCE 067A, DNCE 067B, DNCE 067C
   c) Two (2) units of DNCE 071A-DNCE 075B
2. Upper-division requirements (16 units)
   a) DNCE 114A, DNCE 114B
   b) DNCE 120
   c) Four (4) units from DNCE 114C, DNCE 130/ANTH 130, DNCE 142, DNCE 180Q

Option II — emphasizes dance history. Twenty-four (24) units are required, as follows:
1. Lower-division requirements (8 units)
   a) DNCE 007
   b) DNCE 014
2. Upper-division requirements (16 units)
   a) DNCE 120
   b) DNCE 130/ANTH 130
   c) DNCE 141
   d) DNCE 142

In order to obtain maximum value in either course of study, it is strongly recommended that all Dance minors enroll in one dance technique course each quarter. Technique courses are offered in modern dance, ballet, tap, dance forms of Mexico, and World Dance forms.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

GRADUATE PROGRAM

Doctoral Degree in Dance History and Theory

The UCR Ph.D. program in Dance History and Theory provides an advanced interdisciplinary base for innovative research in the emerging field of cultural and historical studies of dance. The scope of the program embraces a theoretical consideration of all dimensions of the practice of dance — aesthetic issues; body politics; gender, ethnic and class considerations; bodily learning and composition; and relationships between dance and contemporary culture. The program also promotes articulation of a variety of methodological approaches, knowledge and application of which are appropriate to the analysis of bodily performance. The UCR dance faculty draws from a variety of academic and creative backgrounds, including choreography, technique, reconstruction, movement analysis, history, literature, anthropology, gender, race, and cultural studies. Students are expected to select a committee of faculty advisors early in their graduate careers and to work closely with them in planning their individual programs.

Admission

Students must meet the general requirements for admission to the Graduate Division as shown in the Graduate Studies section of this catalog. Statement of background about experience in dance history and theory, a previously prepared research paper, or the equivalent, demonstrating analytical and interpretive skills, and Graduate Record Examination scores are required and determine eligibility.

Prerequisites for the Ph.D. Program in Dance History and Theory include
1. A working knowledge of movement
2. An acquaintance with some system of movement observation and analysis
3. Preparation in general historical and cultural studies

Deficiencies may be corrected with appropriate course work

Program Requirements

In addition to the general University requirements of the Graduate Division as found in the Graduate Studies section of this catalog, the Ph.D. in Dance History normally requires
1. Course work. Core curriculum normally to be completed in the first two years of residency includes
   a) DNCE 254 (History of Dance: Theories)
   b) DNCE 255 (History of Dance: Reconstruction)
   c) DNCE 257 (Analysis of Dance Literature)
   d) DNCE 258 (Histories of World Dance)

Six additional graduate-level courses are required, four from Dance and two from disciplines related to the student's research interest.
2. Language. Competence in at least one foreign language and one notation system, or two foreign languages is also required for all students. Further requirements in specific forms of dance or music notation or ancient or contemporary languages may be determined for each student in consultation with relevant faculty and the Graduate Advisor of the program.

3. Written Examination. A Written Examination Committee composed of five faculty in whose courses the student has completed degree requirements writes the written exam, drawing upon a bibliography of sources (composed by the student and approved by the five faculty) which includes the most significant extant works in the fields in which required course work was completed by the student. The Graduate Advisor administers each student's written examination before or during the seventh quarter of the student's residency.

4. Qualifying Essay. Upon successful completion of the written examination, students prepare a qualifying essay, under the direction of the same group of five faculty who monitored the written examination (substitutes may be appointed by the Graduate Advisor if deemed necessary). The essay serves as an introduction to the subject and methods of the doctoral dissertation.

5. Oral Examination. An Oral Examination Committee of five faculty nominated by the department and appointed by the Dean of the Graduate Division examines the adequacy of the student's preparation to conduct the research proposed in the qualifying essay. Advancement to candidacy for the Doctoral degree depends on completion of required course work, fulfillment of language requirements, and success in passing the written examination, qualifying essay, and the oral examination.

6. Dissertation. A Dissertation Committee of three faculty (one of whom may be from outside the Dance faculty) nominated by the faculty and appointed by the Graduate Dean directs and approves the research and writing of the dissertation (the qualifying essay and dissertation must consist of written work but may include other forms of video/film productions with the approval of the relevant committee and the Graduate Advisor). The dissertation must present original scholarly work and be approved by the Dissertation Committee before the student may take the final oral examination.

7. Final Oral Examination. Satisfactory performance on a final oral examination, conducted by the dissertation committee and open to all members of the faculty, is required. The examination emphasizes the dissertation and related topics.

Normative time to the Ph.D. degree from the B.A. degree is 18 quarters.
Master's Degree

The Intercampus M.A. program in Dance History is no longer accepting new students. Students gaining admission to the Doctor's program in Dance History and Theory may, after advisement and with the approval of the faculty committee, elect to pursue a Master of Arts degree in Dance History and Theory.

Master of Arts in Dance History and Theory

The master's program follows Plan I. (See the Graduate Studies section of this catalog.) The master's program requires:

1. A minimum of 36 quarter units of graduate (200 series) and upper-division undergraduate courses (100 series) must be completed. At least 24 of these units must be in graduate courses and must include the following UC modules:
   a) DNCE 254 (History of Dance: Theories)
   b) DNCE 255 (History of Dance: Reconstruction)
   c) DNCE 257 (Analysis of Dance Literature)
   d) DNCE 258 (Histories of World Dance)

A maximum of 12 units of DNCE 299 (thesis research) will be counted towards the 36-unit minimum. Other courses (to fulfill the 36-unit requirement) should be selected, with the consent of the program Graduate Advisor, from relevant upper-division and graduate courses on any of the participating campuses.

2. Candidates for the degree must prepare and present an acceptable thesis to the Department of Dance.

Master of Fine Arts in Experimental Choreography

The department is currently developing a Master of Fine Arts program in Experimental Choreography, and expects to admit students for the 2001-2002 academic year. Contact the Graduate Advisor, Sally A. Ness, (909) 787-6452, smnes@mail.ucr.edu, for more information about this program, which incorporates historical research and an assessment of contemporary issues in choreography.

LOWER-DIVISION COURSES

DNCE 005. Introduction to Dance. (4)
Seminar; three hours; individual study; one hour; extra reading, one hour; several short essays. As a survey of approaches to dancing and dance-making, this course introduces students to dance technique, performance, and composition as fundamental components in the art of dance. Students will cultivate the ability to enact and remember patterns of rhythm, effort, and visual design in movement and will become acquainted with various procedures for organizing movement. Especially designed for students with no experience in dance:

DNCE 007. Watching the Dance Go By. (4)
Lecture, three hours; outside research, two hours; term paper, one hour. Prerequisite(s): none. A survey of leading dances, dance companies, choreographers, and dancers of the Western world during the twentieth century through slides, films, demonstrations, and performances. Intended for non-majors.

DNCE 014. Introduction to Choreography. (4)
Lecture, four and one-half hours; individual study and one and one-half hours. Prerequisite(s): none. DNCE 015 or DNCE 007 recommended. Analysis of basic problems and issues of choreography. Emphasis is on improvisational methods as an approach to the investigation of space, time, and energy in motion as the fundamental elements of a dance. Course is repeatable to a maximum of 8 units.

DNCE 067A. Beginning Modern Dance Technique. (2)
Studio, three hours; individual study, one hour; extra reading, one hour. Prerequisite(s): none. Modern dance technique at the beginning level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for nondancers and dancers. Normally graded Satisfactory (S) or No Credit (NC). But students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

DNCE 067B. Intermediate Modern Dance Technique. (2)
Studio, four and one-half hours; individual study, one and one-half hours. Prerequisite(s): DNCE 067A recommended. Modern dance technique at the intermediate level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Rogers, Rose, Strickler

DNCE 067C. Advanced Modern Dance Technique. (2)
Studio, four and a half hours; individual study, one and one half hours. Prerequisite(s): DNCE 067B recommended. Modern dance technique at the advanced level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Rogers, Rose, Strickler

DNCE 067D. Advanced Modern Dance Technique. (2)
Studio, four and one hour; individual study, one hour; extra reading, one hour. Prerequisite(s): none. Ballet technique at the beginning level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for nondancers and dancers. Normally graded Satisfactory (S) or No Credit (NC). But students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Rogers, Rose, Strickler

DNCE 071A. Beginning Ballet Technique. (2)
Studio, three hours; screening, one hour; individual study, one hour; extra reading, one hour. Prerequisite(s): none. Ballet technique at the beginning level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for nondancers and dancers. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

DNCE 071B. Intermediate Ballet Technique. (2)
Studio, three hours; screening, one hour; individual study one hour; extra reading, one hour. Prerequisite(s): DNCE 071A recommended. Ballet technique at the intermediate level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

DNCE 071C. Advanced Ballet Technique. (2)
Studio, three hours; screening, one hour; individual study one hour; extra reading, one hour. Prerequisite(s): none. Advanced ballet technique at the advanced level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

DNCE 072A. Beginning Tap Dance Technique. (2)
Studio, three hours; screening, one hour; individual study one hour; extra reading, one hour. Prerequisite(s): none. Tap technique at the beginning level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for nondancers and dancers. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Strickler

DNCE 072B. Intermediate Tap Dance Technique. (2)
Studio, three hours; screening, one hour; individual study one hour; extra reading, one hour. Prerequisite(s): DNCE 072A recommended. Tap technique at the intermediate level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Strickler

DNCE 072C. Advanced Tap Dance Technique. (2)
Studio, three hours; screening, one hour; individual study one hour; extra reading, one hour. Prerequisite(s): DNCE 072B recommended. Tap technique at the advanced level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Strickler

DNCE 073A. Dance of Mexico. (2)
Studio, three hours; screening, one hour; individual study one hour; extra reading, one hour. Prerequisite(s): DNCE 073A recommended. Traditional dances of Mexico at the beginning level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for nondancers and dancers. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

DNCE 073B. Dance of Mexico. (2)
Studio, three hours; screening, one hour; individual study one hour; extra reading, one hour. Prerequisite(s): DNCE 073A recommended. Traditional dances of Mexico at the intermediate level. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.
DNCE 075A. Beginning World Dance Forms (2)
Lecture, three hours; screening, one hour. Individual study, one hour; extra reading, one hour. Prerequisite(s): none. Traditional ethnic dances at the beginning level. Focus is on a specific cultural region each quarter. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for nondancers and dancers. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

DNCE 075B. Intermediate World Dance Forms (2)
Lecture, three hours; screening, one hour. Individual study, one hour; extra reading, one hour. Prerequisite(s): DNCE 075A recommended. Traditional ethnic dances at the intermediate level. Focus is on a specific cultural region each quarter. Outside-of-class assignments include attending dance concerts, viewing dance videos, and regular individual practice sessions. Recommended for nondancers and dancers. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

DNCE 114A. Dance Composition I (4)
Lecture, three hours; studio, three hours. Prerequisite(s): DNCE 107 or DNCE 014 and two quarters of dance technique, or equivalent. The continuing analysis of dance as an art form with emphasis on space, time and energy in motion as elements in choreographic style. In 114A, this is done on the beginning level.

DNCE 114B. Dance Composition II (4)
Lecture, three hours; studio, three hours. Prerequisite(s): DNCE 114A. The continuing analysis of dance as an art form with emphasis on space, time and energy in motion as elements in choreographic style. In 114B, this is done on the intermediate level.

DNCE 114C. Dance Composition III (4)
Lecture, three hours; studio, three hours. Prerequisite(s): DNCE 114B. The continuing analysis of dance as an art form with emphasis on space, time and energy in motion as elements in choreographic style. In 114C, this is done on the advanced level.

DNCE 120. Introduction to Labananalysis (4)
Lecture, two hours; discussion, one hour; extra reading, two hours; observation and composition problems, one hour. Prerequisite(s): DNCE 014 and upper-cultural division standing or consent of instructor. Course covers concepts and theories of the Labananalysis method of observing, recording, and analyzing human body movement. Special attention will be given to the paradigms and notation methods of Labananalysis in examining dance. Course is repeatable to a maximum of 8 units. Cross-listed with ANTH 176, AST 128, MUS 129, and THEA 176.

DNCE 128. Performing Arts of Asia (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in four major geocultural regions of Asia: Central, East, South, and Southeast. No Western music training is required. Course is repeatable to a maximum of 12 units. Cross-listed with ANTH 128, AST 128, MUS 129, and THEA 176.

DNCE 130. Cross-Cultural Perspectives on Dance (4)
Lecture, two hours; discussion, one hour; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. With a view to understanding dance from a global perspective, course will survey anthropological writings on dance traditions found around the world. Topics covered include dance as an expression of social organization and social change, dance as a religious experience, and dance as sport. Cross-listed with ANTH 130.

DNCE 141. History of Ballet (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): none. Art dance from the Italian Renaissance through the ballets of contemporary dance.

DNCE 142. History of Modern Dance (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): none. Art dance from Isadora Duncan to Martha Graham and descendants.

DNCE 167. Dance Production (2)
Studio, six hours. Prerequisite(s): by audition. Study, production, and performance of dances. Course may be repeated for credit.

DNCE 168. Dance Touring Ensemble (4)
Studio, six hours; outside research, three hours. Prerequisite(s): consent of instructor. Dance Touring Ensemble members work with the instructor to create a lecture-demonstration and create and learn repertory which is performed at various sites within the community. Course is repeatable to a maximum of 16 units.

DNCE 170 (E-Z). Dance and Visual Studies (4)
Lecture, three hours; screening, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. Addresses the intersections between the movement arts and their various manifestations in film, video, photography, and other visual media in a given cultural or historical context. E. Movement Performance, Video/Film, and the Body; F. Surrealism and Cinematic bodies; G. Mechanizations of the Body; H. Individual Artists; I. Choreographic cinema and Performance. Seminar, three hours. Prerequisite(s): Graduate standing or consent of instructor. The study of historical theories of dance of the Western tradition.

DNCE 180 (E-Z). Dance Practicum (4)
Studio, eight hours. Prerequisite(s): upper-division courses in choreography or consent of instructor in unusual situations. An investigation of dance production theories and practices. Each practicum is directed experience in a limited topic, announced in advance of the quarter given, with the name of the guest instructor if it is not taught by the staff. E. Cine Dance; F. Folk Forms; G. Advanced Choreography; H. Intermedia Movement; I. Video Dance; J. Repertory; K. Reconstruction of Dances; L. Theory of Individual Choreographers; M. Dance for Children; N. Dance in Therapy; O. Improvisation; P. Role Preparation; Q. Dance Notation; R. Pedagogy; S-Z to be announced.

DNCE 190. Special Studies (1-5)
To be taken with the consent of the Chair of the Department of Dance to meet special curricular problems.

DNCE 191 (E-Z). Seminar in Dance (4)
Seminar, four hours. Prerequisite(s): students are expected to have had DNCE 141 and DNCE 142, although consent of the instructor may be obtained in unusual situations. Seminar in dance history and theory. Each seminar is concerned with a limited topic, announced in advance each quarter. N. Diaghilev and the Ballets Russes; U. Merce Cunningham.

DNCE 198-1. Individual Internship in Dance (1-12)
Prerequisite(s): 1) upper-division standing 2) evidence of prior arrangement with the professional(s) involved; and 3) approval of the UCSC dance faculty sponsor. Work with an appropriate professional individual or organization to gain experience and skill in the student's chosen dance-related specialty. May be repeated to a total of 16 units.

GRADUATE COURSES

DNCE 254. History of Dance/Theories (4)
Seminar, three hours; consultation, one hour. Prerequisite(s): reading knowledge of a language other than English; working knowledge of notation; graduate standing or consent of instructor. The study of historical theories of dance of the Western tradition.

DNCE 255. History of Dance: Reconstruction (4)
Seminar, three hours; studio, two to three hours. Prerequisite(s): reading knowledge of a language other than English; working knowledge of notation; graduate standing or consent of instructor. The study of historical dances of the Western tradition. Dance performance techniques from the Italian Renaissance through the late baroque period and into the modern period. Tomko

DNCE 260 (E-Z). Seminar in Dance History (4)
Seminar, three hours. Prerequisite(s): determined by the instructor of each segment. Studies in E. Periods; F. Styles; G. National Forms; H. Individual Artists; I. Choreographic cinema and Performance, Video/Film, and the Body; J. Architecture, Film, and Movement Performance; K. European Cinema and Performance, M. Popular Culture, Dance, and MTV. N. Politics of Dance: A Cinematographic Approach. Seminar, three hours.

DNCE 257. The Analysis of Dance Literature (4)
Seminar, three hours; consultation, one hour. Prerequisite(s): reading knowledge of a language other than English; graduate standing or consent of instructor. A study of the approach to historical dance materials with a view to examining their accuracy, reliability, and value.

DNCE 258. Histories of World Dance (4)
Seminar, three hours; consultation, one hour. Prerequisite(s): reading knowledge of a language other than English; graduate standing or consent of instructor. Through a comparison of the histories of selected world dance forms, the course will examine different roles and functions played by dance in society and the different conceptions of dance history and dance historical research.

DNCE 260 (E-Z). Seminar in Dance History (4)
Seminar, three hours. Prerequisite(s): determined by the instructor of each segment. Studies in E. Periods; F. Styles; G. National Forms; H. Individual Artists; I. Choreographies; J. Aesthetics; K. Dance Literature; L. Notation.

DNCE 264. Oral History (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. Theory and practice of oral history as a research technique. Ethnographic, social history, and gender perspectives on oral history; methods for research preparation, interview procedures, transcription, editing, and legal responsibilities. Interview project and analytical paper required. Ness, She Murphy, Tomko

DNCE 265 (E-Z). Seminar in Dance Research Methods (4)
Seminar, three hours; outside research, two hours; individual study, one hour. Prerequisite(s): graduate standing
and/or consent of instructor. For DNCE 265I, reading knowledge of German and/or French suggested, but not required. Analysis of dance subjects through the application of different methodological and theoretical orientations currently in use in a wide variety of disciplines. I. Contemporary Critical Theory and European Movement Performance; K. Performativity as Cultural Intervention.

Foster, Shea Murphy

DNCE 267. Choreographies of Writing. (4)
Seminar, three hours; discussion, one hour. Prerequisite(s): consent of instructor. An analysis of the types of relationships that may exist between dance and text. Examines the methods and strategies for translating choreographed action into a written description of that action. Students’ writing is a major focus of discussions. Foster, Shea Murphy

DNCE 268. Choreography and Theory. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): consent of instructor. An analysis of contemporary choreography as social theory and an investigation of correspondences between choreographers’ and scholars’ theories of individual and social identity. Assignments include critically viewing, analytically writing, and making dances from a theoretically informed perspective.

DNCE 269. Laban Movement Analysis. (4)
Seminar, three hours; outside research, one hour; consultation, one hour; individual study, one hour. Prerequisite(s): DNCE 120; graduate standing or consent of instructor. An advanced survey focusing on applied research concepts and theories of the Laban Movement Analysis method of observing, recording, and analyzing human body movement. Special attention is given to motif scoring and creating, applying Effort, Shape, and Space Harmony paradigms. Course is repeatable to a maximum of 12 units.

DNCE 290. Directed Studies. (1-6)
Outside research, three to eighteen hours. Prerequisite(s): graduate standing; consent of instructor and Department Chair. To be taken to meet special curricular problems. Normally graded Satisfactory (S) or No Credit (NC) only, but students may petition the instructor for a letter grade for specialized topics pursued with close faculty supervision. Course is repeatable.

DNCE 291. Individual Study in Coordinated Areas. (1-12)
Outside research, three to thirty-six hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. A program of study designed to advise and assist graduate students who are preparing for written and oral qualifying examinations. Does not count toward the unit requirement for the Ph.D. degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

DNCE 292. Concurrent Analytical Studies in Dance. (1-4)
Outside research, three to twelve hours. Prerequisite(s): graduate standing; consent of instructor and Graduate Advisor. To be taken concurrently with some 100-series course, but on an individual basis. Limited to research, criticism, and written work of a graduate order commensurate with the number of units elected. Normally graded Satisfactory (S) or No Credit (NC) only, but students may petition the instructor for a letter grade for specialized topics pursued with close faculty supervision. Course is repeatable.

DNCE 297. Directed Research. (1-6)
Research, three to eighteen hours. Prerequisite(s): consent of instructor and graduate advisor. Individualized studies in specially selected topics in Dance under the direction of a staff member. Graded Satisfactory (S) or No Credit (NC).

DNCE 298. Individual Internship. (1-4)
Individual study or apprenticeship with an appropriate professional individual or organization to gain experience and skill in activities related to dance history. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

DNCE 299. Research for the Thesis or Dissertation. (1-12)
outside research, three to thirty-six hours. Prerequisite(s): consent of thesis or dissertation director. Research for and preparation of the thesis or dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**PROFESSIONAL COURSE**

DNCE 302. Teaching Practicum. (1-4)
Lecture, one to four hours. Prerequisite(s): graduate standing. Supervised teaching in upper-division Dance History classes and lower-division Dance courses. Required of all Dance History teaching assistants. Credit not applicable toward degree unit requirements. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**EARTH SCIENCES**

Subject abbreviation: GEO

Michael O. Woodburne, Ph.D., Chair
Department Office, 1432 Geology
(909) 787-3435

Professors
Mary L. Droser, Ph.D.
Harry W. Green, II, Ph.D.
Tien-Chang Lee, Ph.D.
Richard A. Mnnich, Ph.D.
Stephen K. Park, Ph.D.
Peter M. Sadler, Ph.D.

Professors Emeriti
Shawn Buhl, Ph.D.
Lewis H. Cohen, Ph.D.
Willard E. Elders, Ph.D.
Michael A. Murphy, Ph.D.
Michael O. Woodburne, Ph.D.

Associate Professors
Nigel C. Hughes, Ph.D.
Michael A. McKibben, Ph.D.
Alan E. Williams, Ph.D.

Assistant Professors
Martin J. Foster, Ph.D.
Samantha Price, Ph.D.
Lewis A. Owen, Ph.D.

Adjunct Professors
Douglas M. Morton, Ph.D.
Stephen G. Wells, Ph.D.

Adjoint Associate Professors
Yue-Hong Chou, Ph.D.
Larissa E. Dohrenvenskaya, Ph.D.

Adjoint Assistant Professor
Thomas A. Scott, Ph.D.

Lecturer
Marilyn A. Kooser, Ph.D.

**MAJORS**

The Department of Earth Sciences offers Bachelor of Science degrees in Geology and Geophysics. These B.S. degree programs are designed for students with a strong interest in various aspects of the Earth Sciences. The programs in the Department of Earth Sciences place substantial emphasis on field work with field courses, field trips in all appropriate courses, and excursions between quarters. The Department of Earth Sciences offers the M.S. and Ph.D. in Geological Sciences.

**Academic Advising**

Undergraduate advising in the Department of Earth Sciences is designed to allow close professional contact with our faculty and staff. Counseling on graduation and departmental requirements as well as counseling on enrollment is handled in the Department Office by the Student Affairs Officer.

Each major will select a faculty mentor who will counsel the student on career goals and research opportunities. The department recommends that each student meet with their faculty mentor at least once each quarter to clarify career objectives and revise the program of study so it is commensurate with the developing interests and objectives of the student.

**Teaching Credential**

Teachers in the public schools in California must have a credential approved by the State Commission on Teacher Credentialing. The credential requires an undergraduate major, baccalaureate degree, and completion of a graduate credential program such as that offered by the Graduate School of Education at UCR. The latter usually requires three quarters and includes education courses and supervised teaching.

Before admission and student teaching in a graduate credential program, the candidate must pass the California Basic Education Skills Test (CBEST) and demonstrate subject-matter proficiency in the fields which the candidate will teach. The candidate can demonstrate proficiency either by passing the Commission’s subject-matter assessment examination, or preferably, by completion of an undergraduate program that is state-approved for teacher preparation.
UCR has an approved undergraduate program for earth science majors who plan to get a Multiple Subjects Credential and teach in the elementary (K-6) grades. A breadth of course work is necessary, in addition to the specified requirements for the major. Students are urged to start early preferably as freshmen, selecting courses most helpful for this career.

UCR does not yet have a state-approved undergraduate program for earth science majors who wish to teach at the secondary level. The Teaching Credential in Science, geoscience emphasis, is required for geoscience teachers, grades 7-12. Students who plan to get this credential must take the Commission’s subject-matter assessment examination and should make certain their academic program includes preparatory course work. The examination includes geoscience in depth and general science with introductory, college-level biology, chemistry, physics, and geoscience (geology, meteorology, oceanography, astronomy).

Further information about courses, requirements, and examinations can be obtained in orientation meetings, the Student Affairs Office (1432 Geology Building), and the Graduate School of Education (1215 Sproul Hall).

Geology Major
The department offers three options for the Geology major: General Geology, Geobiology, and Biogeography. Students who choose the Geology major study the structure, composition, processes, and history of the earth. In particular, the Geology major stresses features of the Earth’s surface and interactions between its atmosphere, hydrosphere, biosphere, rocky crust, and interior.

General Geology Option
Students entering the General Geology option study the nature, distribution, age, and origin of minerals, rocks, and their contained fossils, placed within a global framework of the Earth as an evolving geologic system. The option entails a broad range of geologic training including geology, geophysics, geochemistry, and paleontology. An emphasis is also placed on field work (mapping, sampling) and thoughtful analysis of geologic data (including statistical and graphical analysis with computers). Though broadly based, the option provides the student some flexibility to pursue specific geologic areas of interest at the upper-division level. Graduates of the General Geology option are qualified to pursue almost any professional career in the Earth Sciences and are well-suited to tackle graduate research at the M.S. or Ph.D. level.

Geobiology Option
The Geobiology option offers broad-based geological training combined with a special emphasis on paleontology and organism/time interactions. Students take the geology core but at the undergraduate upper-division level focus on courses related to the fossil record, evolution and biodiversity, sedimentology, stratigraphy, and biogeography. The graduate will leave with a marketable geology degree coupled with special insight into historical aspects of life’s place and role on this planet.

Biogeography Option
Students entering the Biogeography option study spacial and temporal distribution, structure, dynamics, and conservation of natural communities and ecosystems. Biogeography has foundations both in biological and earth sciences. The biogeography of species is studied to determine evolutionary and dispersal history over long time scales as well as recent, local, and regional distributions in relation to our contemporary environment and impacts by people. Students in this option receive training in ecology, vegetation analysis, resource conservation, and management of natural lands.

Geophysics Major
Students who choose the Geophysics major apply the principles and concepts of physics, mathematics, geology, and engineering to the study of the physical characteristics of the earth and other planets. They make measurements of gravity and magnetic fields, seismic waves, temperatures, and natural electric current. Geophysicists study these topics from the standpoint of the physics of solid bodies, gases, and fluids. Some geophysicists are field oriented, some laboratory oriented, some theoretical, and some combine these areas.

Degree Requirements
University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Natural and Agricultural Sciences in the Undergraduate Studies Section, for requirements that students must satisfy.

Some of the following requirements for the major may also fulfill some of the College’s breadth requirements. Consult with a department advisor for course planning.

Major Requirements
Geology Major
All courses in Geosciences that are prerequisites for other courses in the major must be passed with a grade of “C” or better before proceeding in the sequence. For example, GEO 001 is a prerequisite for GEO 030.

The Department offers three options to majors in Geology: General Geology, Geobiology, and Biogeography. All students majoring in Geology are normally required to take the core curriculum. Both General Geology and Geobiology options require the Geology core curriculum presented below. The Biogeography option utilizes the Life Sciences core curriculum, enhanced by inclusion of required and optional Geology course work as indicated below.

General Geology and Geobiology Options
Core Requirements
1. Lower-division requirements
   a) GEO 001, GEO 002, GEO 003/BIOL 010, GEO 020, GEO 030
   b) BIOL 002 or BIOL 005A
   c) CHEM 001A-CHEM 001B-CHEM 001C
   d) MATH 009A-MATH 009B-MATH 009C
   e) PHYS 040A, PHYS 040B, PHYS 040C
2. Upper-division requirements
   GEO 100, GEO 101, GEO 102, GEO 116, GEO 157, GEO 180

Option Requirements
1. Upper-division requirements
   a) General Geology Option
      (1) One course from GEO 118, GEO 160, GEO 161, GEO 162
      (2) One course from GEO 123, GEO 124, GEO 132, GEO 137
      (3) One course from GEO 140, GEO 141, GEO 145
      (4) One course from GEO 151 GEO 152/BIOL 152, GEO 153
      (5) Sixteen (16) additional units of upper-division related courses approved by the Undergraduate Advisor
   b) Geobiology Option
      (1) GEO 118
      (2) Three courses from GEO 151, GEO 152/BIOL 152, GEO 153, GEO 168A or GEO 168B
      (3) Sixteen (16) additional units of upper-division related courses approved by the Undergraduate Advisor
Biogeography Option

The Biogeography Option utilizes the Life Sciences core curriculum, enhanced by inclusion of both required and optional Geology coursework as indicated below.

1. Lower-division requirements
   a) GEO 001, GEO 002, GEO 003/BIOL 010
   b) BIOL 005A, BIOL 005B, BIOL 005C
   c) CHEM 001A-CHEM 001B-CHEM 001C
   d) MATH 009A-MATH 009B
   e) PHYS 002A, PHYS 002B, PHYS 002C, PHYS 021A, PHYS 021B, PHYS 021C or PHYS 040A, PHYS 040B, PHYS 040C

2. Upper-division requirements
   a) GEO 157, GEO 167, GEO 168A, GEO 168B
   b) CHEM 112A-CHEM 112B-CHEM 112C
   c) One of BCH 100 or BCH 110A
   d) Two courses from GEO 151, GEO 152/BIOL 152, GEO 153
   e) Two courses from GEO 160, GEO 161, GEO 162
   f) One of STAT 100A or STAT 120A
   g) Sixteen (16) additional units of upper-division related courses approved by the Undergraduate Advisor

Geophysics Major

The following are major requirements for the B.S. in Geophysics. All students majoring in Geophysics are normally required to take this core curriculum.

1. Lower-division requirements
   a) MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B, MATH 046
   b) PHYS 040A, PHYS 040B, PHYS 040C
   c) CHEM 001A-CHEM 001B
   d) GEO 001, GEO 003/BIOL 010, GEO 030

2. Upper-division requirements
   a) PHYS 130A, PHYS 135A
   b) One course from PHYS 130B, PHYS 135B, PHYS 136, PHYS 177
   c) GEO 101, GEO 116, GEO 118, GEO 140, GEO 141
   d) Four (4) units of upper-division geosciences to be taken in consultation with faculty advisor
   e) GEO 002, PHYS 040D, and PHYS 040E are recommended

GRADUATE PROGRAMS

Graduate education in the Geological Sciences emphasizes general geology combined with specialization in fields such as evolutionary paleobiology, invertebrate and vertebrate paleontology, Quaternary geology, neotectonics, applied geophysics, geotechnics, crustal processes, geochemistry, geothermal resource investigations, groundwater, mineral deposits, stratigraphy, sedimentology, sedimentary geochemistry, basin analysis, landscape ecology, fire ecology, natural resource conservation, and GIS. Integrated field and laboratory studies are encouraged. An undergraduate degree in geology or geophysics is the normal preparation for graduate work; however, a degree from a related field of science or engineering is often appropriate. Applicants to graduate status must supply Graduate Record Examination scores for the General Test (verbal, quantitative, analytical) prior to their admission.

Master’s Degree

The normative time to a master’s degree is seven quarters. In addition to the general requirements listed under the Graduate Studies section of this catalog, the requirements for the M.S. are as follows:

1. A student is required to make up any deficiency in preparation. The background required is course preparation equivalent to the bachelor’s degree in Geology or Geophysics at UCR. Courses taken to remedy background deficiencies are not applicable to the graduate degree. Such courses will be designated in the letter of admissions to the program sent to the student by the Dean of the Graduate Division.

2. Biannual reviews by the departmental Graduate Progress Committee are required for all students. A student’s progress is assessed in these reviews, and the Committee may recommend changes in a student’s plans after these reviews.

3. All students must enroll each quarter in the Graduate Seminar in Geosciences (GEO 250). Students are also required to attend the weekly Hewett Club lecture series.

4. A minimum of 36 units of course work in the major and related subjects and advance approval of a coherent plan of study by the graduate advisor are required. A minimum of 12 upper-division units beyond the requirements for the bachelor’s degree may be applied to the 36-unit requirement. A minimum of 12 units of graduate courses, which must include at least four graduate-level instructional courses taught by four different faculty members as approved by the graduate advisor, are required. Before the end of the third quarter of study and before embarking on research, a student must submit a written thesis proposal to the departmental Graduate Progress Committee. After approval of the proposal, a thesis based on original work must be submitted to and approved by a thesis committee. A maximum of 12 units of thesis research may be counted toward the 36-unit minimum.

5. A final oral examination will consist of an open research seminar, presented by the candidate and advertised to all the students and faculty in the Earth Sciences Department. Subject to the approval of the graduate advisor, a limited number of upper-division courses in the major and related sciences, if not required for the bachelor’s degree and not taken previously, may be accepted for graduate credit.

Doctoral Degree

In addition to the general University requirements of the Graduate Division as found in the Graduate Studies section of this catalog, the Ph.D. in Geological Sciences normally requires

1. Biannual Reviews. All students meet with the Graduate Progress Committee during their first week at UCR to discuss general interests, goals, and plans. The committee will recommend courses designed to prepare a student for research and to correct deficiencies in background. This committee will also review a student’s progress biannually and may recommend transfer to the master’s program if normal progress is not maintained.

2. All students must enroll each quarter in the Graduate Seminar in Geosciences (GEO 250). Students are also required to attend the weekly Hewett Club lecture series.

3. Course Work. At least four graduate-level instructional courses taught by four different faculty members as approved by the Graduate Advisor are required. Course work used in satisfaction of the M.S. degree may be accepted with the Graduate Advisor’s approval.

4. Written Qualifying Examination. Two research proposals must be written by the student. The proposal topics must be approved by an exam committee in order to insure breadth. The proposal will be reviewed by the exam committee and, if acceptable, the faculty will recommend that the student proceed to the Oral Qualifying Examination.

5. Oral Qualifying Examination. An Oral Examination Committee appointed by the
Dean of the Graduate Division will examine the adequacy of the student's preparation to conduct the proposed research. Advancement to candidacy in the Ph.D. program follows successful completion of the oral examination.

6. Dissertation. A dissertation normally evolves from the research proposal. The dissertation must present original scholarly work and be approved by a dissertation committee before the student may take the final oral examination.

7. Final Oral Examination. Satisfactory performance on a final oral examination given by the dissertation committee is required. Major emphasis in this examination will be placed on the dissertation and related topics.

Normative time to the Ph.D. degree from the B.S. degree is 17 quarters.

LOWER-DIVISION COURSES

GEO 001. The Earth's Crust and Interior. (4)
Lecture, three hours; laboratory, three hours; one-one-day field trip. An introduction to the physical development of the Earth. Emphasis will be on Earth materials (rocks and minerals), processes (weathering, erosion, mountain building), structures (folds and faults), and current theories regarding the Earth's crust and interior.

GEO 002. The Earth's Dynamic Surface. (4)
Lecture, three hours; laboratory, three hours; one-two-day field trip. Prerequisite(s): none. Introduction to physical processes operating at the Earth's surface, emphasizing the interaction of the atmosphere, hydrosphere, and lithosphere. Focus given to development of landforms (such as rivers, glaciers, and deserts), dynamics and geological consequences of water movement and storage at the Earth's surface, and the role of climate and climate change in the formation and evolution of Earth's landscapes.

GEO 003. Headlines in the History of Life. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): none. Evolution of life beginning with procaryotic life. Topics include the origin of sex, multicellularity, vertebrate classes, morphological specializations, adaptive radiations, extinction dynamics, and the biology of dinosaurs. Cross-listed with BIOL 010.

GEO 004. Natural Hazards and Disasters. (4)
Lecture, three hours; discussion, one hour. Application of basic principles of climate and geology to recognition of natural hazards and their mitigation. Topics will include fires, floods, flash floods, landslides, volcanic eruptions, earthquakes, and tsunamis. Emphasis will be placed on confronting hazards of concern to home-buyers, planners, and conservationists in the western United States, especially southern California.

GEO 005. The Cosmos Factory. (4)
Lecture, three hours; discussion, one hour. A survey of selected topics in the earth and planetary sciences as applied to the present concepts of the cosmos, the nature and origin of the universe, and emphasizing recent problems in geophysics, geology, geochemistry, and planetary sciences.

GEO 008. Earthquake Country. (4)
Lecture, three hours; discussion, one hour. An introduction to the study of earthquakes and the problems of living in earthquake country. Why earthquakes occur, how they are recorded, and what the effects are on man and his structures. The scientific and social consequences of earthquake prediction.

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 005 or equivalent. An introduction to the occurrence, availability, marketing, and usage of metals, minerals, petroleum, and other geologic resources, including both historic and recent trends. Conflicts between modern society's need for increasingly scarce resources and mounting environmental problems. Political and economic influences on international mineral and energy markets. Designed for non-geology majors, particularly those in economics, business administration, political science, education and environmental science.

Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 010/GEO 003, GEO 001, and GEO 002 with grades of "C-" or better; MATH 009A or MATH 09HA (MATH 09HA may be taken concurrently). Examines the mathematical, statistical, and computational techniques used in data collection and analysis in geology, geophysics, geochemistry, and paleobiology. Provides an overview of the geoscience context for numerical methods.

GEO 030. Mineralogy. (5)
Lecture, three hours; laboratory, five hours; two-half-day and one one-day field trips per quarter. Prerequisite(s): CHEM 010B or CHEM 01HB (MATH 150A is recommended). Examines the identification of common and important minerals and their identification using modern analytical methods. Stresses distinctive structural and chemical features, diagnostic physical and optical properties, and the growth and development of minerals in various geologic environments.

GEO 100. Introductory Petrology. (5)
Lecture, three hours; laboratory, six hours; three one-half-day field trips per quarter. Prerequisite(s): GEO 010 (or GEO 020) and GEO 030 with grades of "C-" or better. Introduction to the nomenclature and classification of igneous and sedimentary rocks and their metamorphosed equivalents. Topics include identification of the major rock-forming minerals and common rocks in hand samples and thin sections, and interpretation of rock fabrics and textures. Explores tectonic setting and the origins of major rock types.

GEO 101. Field Geology. (5)
Lecture, two hours; weekly one-half-day field trips. Prerequisite(s): GEO 100 and GEO 116 with grades of "C-" or better or consent instructor for concurrent enrollment. Introductory course in field geology. Covers methods of mapping igneous, metamorphic, and sedimentary rocks. Includes construction of planimeter and topographic maps, use of aerial photographs, and instruction in basic surveying techniques.

GEO 102. Summer Field Geology (14)
Field, six weeks. Prerequisite(s): GEO 101 with a grade of "C-" or better or consent of instructor. Geological mapping and interpretation; writing of geological reports.

GEO 116. Structural Geology. (5)
Lecture, two hours; laboratory, six hours; three one-half-day field trips; two one-half-day field trips per quarter. Prerequisite(s): GEO 001 (may be taken concurrently); MATH 005. Description and field examination of geologic structures. Graphical solution of structural problems and laboratory map study. Genesis of rock structures and physics of rock deformation. Mehr diagrams and elementary stress analysis.

GEO 118. Sedimentology and Stratigraphy. (5)
Lecture, two hours; laboratory, six hours; two one-day and one two-day field trips. Prerequisite(s): GEO 100 with a grade of "C-" or better. The study of the principles of sedimentology and the comparative study of the origins of sediments and sedimentary rocks from various modern and ancient clastic, carbonate, and mixed siliciclastic-carbonate depositional environments. Emphasis is placed on field and stratigraphic relationships as well as on petrographic and hand specimen identification.

GEO 123. Advanced Mineralogy. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CHEM 011C or CHEM 012C. GEO 030 with a grade of "C-" or better or CHEM 150A is recommended. A study of the instrumental techniques used in advanced studies in mineralogy and petrology. Topics include optical microscopy, X-ray diffraction spectroscopy, Fourier Transform Infrared (FTIR) spectroscopy, and Raman spectroscopy.

GEO 124. Advanced Petrogenesis. (4)
Lecture, two hours; laboratory, three hours; three one-day field trips. Prerequisite(s): GEO 100 with a grade of "C-" or better. Explores advanced topics in the petrogenesis of igneous and metamorphic rocks in the Earth's crust and mantle. Examines field and structural relationships of crystalline rocks and how thermodynamics, experimental phase equilibria, and computer modeling are used to study petrogenesis.

GEO 126. Sedimentary Basin Analysis. (4)
Lecture, two hours; laboratory, six hours; one one-day field trip. Prerequisite(s): GEO 118 and GEO 123 with grades of "C-" or better or consent of instructor. The study of the principles of sedimentary basin analysis with an emphasis on provenance studies, clastic and carbonate diagenesis, burial history, regional and global stratigraphic cycles, sedimentation, and plate tectonics. Laboratory will emphasize the use of the petrographic scope and the cathodoluminescope for provenance and diagenetic studies.

GEO 132. Groundwater Geology. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CHEM 001B, MATH 09HB, PHYS 040A. The nature and behavior of waters in geologic media; chemical nature of groundwaters and geothermal fluids; principles of fluid flow in sediments and rocks; chemical reactions between solutes and geologic media; geologic aspects of contaminant migration in groundwaters; behavior of geothermal fluids; elementary computer modeling of groundwater and geothermal fluid flow in geologic media.

GEO 137. Environmental Geochemistry. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 011C or equivalent; GEO 001 with a grade of "C-" or better or GEO 002 with a grade of "C-" or better. Examines the chemical principles of geologic processes at and near the Earth's surface. Topics include geochemical cycles of the elements during chemical interactions of the Earth's crust, hydrosphere, and atmosphere; applications of thermodynamics and kinetics to the study of low-temperature geologic processes; and the use of isotopic techniques in age dating and tracing geologic processes.
**GEO 130. Soil Morphology and Classification. (4)**
Lecture, three hours; laboratory, normally three hours; two one-day field trips. Prerequisites(s): ENVS 100; GEO 001 or GEO 002; or consent of instructor. The study of soils as they occur in the field and their relations to current and past environmental conditions. Use of field and laboratory data to understand soil genesis, causes of soil variability, fundamentals of soil classification, and land use potentials. Laboratory emphasizes the description and interpretation of soils and landscapes in the field. Cross-listed with ENVS 136 and SWSC 136.

**GEO 140. Introduction to the Physics of the Earth. (3)**
Lecture, three hours; laboratory, three hours. Prerequisite(s): GEO 001 with a grade of "C-" or better; MATH 090C or MATH 097C; PHYS 040C. Application of classical physics to the study of the Earth. Origin of the Earth, its gravitational field, magnetic and geomagnetic, and geothermal characteristics, seismicity, and the dynamics of the Earth's crust, plate tectonics, and continental drift.

**GEO 141. Principles of Field Geophysics. (4)**
Lecture, two hours; laboratory, eight hours; one three-day field trip; two two-day field trips. Prerequisites(s): GEO 116 and GEO 140 with grades of "C-" or better or consent of instructor. An integrated field geophysics course. Application of seismic refraction techniques, gravimetric measurements, magnetic surveys, and electrical surveys to the solution of geologic problems.

**GEO 145. Shallow Subsurface Imaging. (4)**
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 010/GEOL 003 with a grade of "C-" or better or BIOL 010/GEOL 003 with a grade of "C-" or better; MATH 009A or MATH 097A; MATH 009B or MATH 097B; PHYS 002A or PHYS 040A; PHYS 002B or PHYS 040B; PHYS 002C or PHYS 040C; or consent of instructor. Covers techniques of geophysical investigation of the shallow subsurface as they apply to solving groundwater, environmental, archaeological and engineering problems. Emphasizes methods, survey design, and interpretation with focus on case studies. Laboratory consists of both field training and computer exercises using geographic information systems for analysis of spatial data.

**GEO 151. Principles of Paleontology. (4)**
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 010/GEOL 003 with a grade of "C-" or better or BIOL 010/GEOL 003 with a grade of "C-" or better. Topics include fundamentals of evolution and the fossil record; introductory morphometrics and biosystemic theory; functional morphology, and metazoon organization and classification.

**GEO 152. Principles of Invertebrate Paleobiology and Paleoecology. (4)**
Lecture, two hours; laboratory, three hours; one three-day field trips. Prerequisite(s): BIOL 005C with a grade of "C-" or better or BIOL 005C focuses on the history of biodiversity and the responses of organisms to episodes of profound environmental change. Outlines the major features of evolutionary history chronicled by fossils, the dynamics of evolutionary radiations and extinctions, and the implications of paleontological data for current issues in biodiversity.

**GEO 157. Automated Geographic Information Systems. (4)**
Lecture, two hours; laboratory, six hours. Prerequisite(s): upper-division standing. Review and analysis of automated geographic information systems, data structures, data bases, and coordinate systems. Techniques of spatial partitioning, interactive map editing and design, and computer graphics. Computation and display of map projections. Analysis of trends in earth resources data handling.

**GEO 160. Atmospheric Circulation. (4)**
Lecture, three hours; laboratory, three hours. Prerequisite(s): GEO 002 with a grade of "C-" or better or consent of instructor. A study of the fundamentals of atmospheric circulation. Topics include radiant energy exchange, atmospheric stability, moisture, cloud and precipitation processes, local winds, polar front jet stream, and tropical circulations.

**GEO 161. Quaternary Paleoenvironmental Change. (4)**
Lecture, two hours; laboratory, six hours; field trip, two days. Prerequisite(s): upper-division standing; consent of instructor. A study of surficial processes related to the development and evolution of landforms and landscapes at the Earth's surface. Emphasis is on weathering regimes, mass wasting and hilly slope development, river process, and form. Examines erosional and depositional processes in tectonic, volcanic, arid, karst, glacial, and coastal landscapes.

**GEO 167. Conservation and Land Use. (4)**
Lecture, three hours; laboratory and field, three hours. Prerequisite(s): GEO 168A with a grade of "C-" or better. Application of biogeographic and ecological theories in the conservation of plants, animals, and wildlands. Topics include biological preserve design, ecological consequences of land development, and wildlife-habitat relationships.

**GEO 168A. Biogeography. (4)**
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 010/GEOL 003 with a grade of "C-" or better or GEO 002 with a grade of "C-" or better or consent of instructor. Analysis of world vegetation patterns, migrations, and ecological considerations at scales ranging from geologic to historical. Topics include plant migration, endemism, continental species patterns, ecological convergence, island biogeography, and world species diversity.

**GEO 168B. Landscape Ecology. (4)**
Lecture, three hours; laboratory, three hours. Prerequisite(s): GEO 168A with a grade of "C-" or better. Examines the ecology and distribution of California ecosystems as related to landscape models that integrate fire regimes with climate, vegetation structure, and topography. Minnich.

**GEO 180. Senior Seminar in Earth System History. (3)**
Seminar, three hours. Prerequisite(s): senior standing in Geology. A study of the history of the integrated Earth system through geologic time. Covers interactions and feedback among the major tectonic, volcanic, climatic, and biologic events in Earth history. Includes discussion of controversial topics in the geologic history of the Earth and its organisms.

**GEO 190. Special Studies. (1-5)**
Individual study, three to fifteen hours. Prerequisite(s): upper-division standing; consent of instructor and Department Chair. Individual study to meet special curricular needs. Course is repeatable to a maximum of 9 units.

**GEO 191. Undergraduate Seminar in Geological Sciences. (1)**
Seminar, one hour. Prerequisite(s): open to upper division Geological Sciences majors only. For undergraduate students who desire formal participation in the weekly departmental seminar. In addition to attending the seminar, students must write abstracts describing two of the presentations. Graded Satisfactory (S) or No Credit (NC). May be repeated to a total of 5 units.

**GEO 195A-GEOL 195B-GEOL 195C. Senior Thesis. (3-5, 3-5, 3-5)**
Hours per week to be established by supervisor. Prerequisite(s): senior status; consent of instructor. Preparation of a thesis based upon supervised field and/or laboratory research and literature review in the geological sciences. The thesis may be undertaken as a one, two, or three quarter sequence. In the case of a two or three quarter sequence, the final year will be deferred until completion of the last quarter. Total credits may not exceed 9 units.

**GEO 1984. Independent Internship. (1-12)**
Field, three to thirty-six hours. Prerequisite(s): consent of instructor, undergraduate advisor, and department chair. Independent study in a surrogate job position under non-university supervision. Internships are normally in public or private institutions such as planning departments, research labs, or industry. Position, task, method of reporting completion, and accomplishments, and units must have prior agreement among student, instructor, and supervisor. One unit for every three hours per week spent in internship. Graded Satisfactory (S) or No Credit (NC).

**GEO 201. Quantitative Analysis of Surficial Process. (4)**
Lecture, two hours; laboratory, five hours; one two-day field trip. Prerequisite(s): GEO 162 or consent of instructor. Advanced studies of the basic concepts, quantitative approaches, and modern research in processes operating on the Earth's surface. Emphasizes fluvial and hillslope hydrology, drainage basin process and form, channel morphology and adjustments, and valley floor evolution. Group research project involves data collection and quantitative analysis of river or hillslope processes.

**GEO 203. Mineral Equilibria. (4)**
Lecture, four hours. Prerequisite(s): GEO 137 or consent of instructor. Applications of thermodynamics and kinetics to evaluating equilibria among minerals and fluids in geological environments. Emphasis placed on equilibria in geothermal systems, ore deposits, metamorphic and igneous rock, and groundwater.

**GEO 205. Geohydrology. (4)**
Lecture, three hours; laboratory, three hours; one one-day field trip. Prerequisite(s): GEO 132 or ENVS 163. Fluid flow in geologic media; resource evaluation; and relevant geologic hazards and geotechnical problems.
GEO 206A-GEO 206B. Stratigraphy. (4-4)
Lecture, two hours; laboratory, six hours. Prerequisite(s): GEO 119; consent of instructor. Covers rock stratigraphy, time stratigraphy, and biostratigraphy with an emphasis on their principles, history, and methods. Includes reading and analysis of pertinent literature and field trips.

GEO 212. Ecological Systems in Space and Time. (4)
Lecture, two hours; discussion, one hour; field, thirty hours per quarter. Prerequisite(s): BIOL 117 or BIOL 152/GEO 152 or equivalent or consent of instructor. Examines the historical development of our understanding of ecological systems at various scales. Cross-listed with BIOL 212 and ENMT 212.

GEO 219. Theory of Systematics. (4)
Lecture, two hours; discussion, two hours. Prerequisite(s): BIOL 112/BIOL 112/ENMT 112 or equivalent or consent of instructor. Examines topics developed around a series of classical and recent papers on the principles, philosophy, and methodology of modern systematics and phylogenetic methods. Cross-listed with BIOL 219 and ENMT 219.

GEO 222. Geothermics. (4)
Lecture, three hours; discussion, two hours. Prerequisite(s): consent of instructor: Geology, geophysics, and geochemistry applied to geothermal resource investigations. Selected case histories illustrating exploration, assessment, and utilization of geothermal fields.

GEO 225A. Geology of Carbonate Rocks. (4)
Lecture, two hours; laboratory, six hours. Prerequisite(s): GEO 118; consent of instructor. Covers characterization, recognition, and interpretation of carbonate rocks. Laboratory work includes study of polished and thin sections of selected suites of rocks.

GEO 225B. Geology of Detrital Rocks. (4)
Lecture, two hours; laboratory, six hours. Prerequisite(s): GEO 118; consent of instructor. Covers characterization, recognition, and interpretation of detrital rocks. Laboratory work includes study of polished and thin sections of selected suites of rocks.

GEO 239. Advanced Topics in Ore Petrology. (4)
Lecture, two hours; laboratory, six hours. Prerequisite(s): GEO 110; consent of instructor. Covers advanced topics in ore petrology, including ore microscopy, ore mineral phase equilibria, fluid inclusion techniques, and thermodynamic calculations relevant to ore genesis. Course content varies from year to year.

GEO 241. Advanced Field Geophysics. (14)
Lecture, ten hours; laboratory, sixteen hours; field, fourteen hours. Prerequisite(s): GEO 141 or equivalent; knowledge of Fortran or equivalent. Advanced applications of modern geophysical field techniques to the solution of complex geological problems, using seismic reflection and refraction, electrical and rock magnetic, potential field, and well logging methods.

GEO 242. Potential Fields. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): GEO 140 or consent of instructor. A study of classical and modern geodesy, the Earth's gravitational and magnetic field from surface and satellite data. The reduction and interpretation of gravity and magnetic measurements and their relationship to major tectonic features. The gravity and magnetic field of the moon and other planets and their relation to surface features.

GEO 247. Electrical Exploration Methods. (4)
Lecture, three hours; laboratory, four hours. Prerequisite(s): MATH 009A-MATH 009B-MATH 009C; PHYS 040A; or consent of instructor: Study of electrical properties of Earth's materials. Calvanic resistivity methods in a multilayered medium. Potential distribution and interpretation of empirical data. Electrical well logging. Elements of telluric and magnetotelluric sounding.

GEO 249. Field Methods in Quaternary Geology. (4)
Discussion, two hours; laboratory, six hours; three two-day field trips. Prerequisite(s): GEO 101 or GEO 162 or consent of instructor. Geologic field problems and associated techniques for reconstructing Quaternary geologic, climatologic, and hydrologic events recorded in the landforms, stratigraphy, and weathering profiles of selected regions. Field techniques include relative and calibrated dating analysis, section measurements, morpho- and biostratigraphic analysis, and map constructions in fluvial, lacustrine, glacial, coastal, and eolian environments.

GEO 250. Graduate Seminar in Geological Sciences. (3)
Seminar, one hour. Prerequisite(s): graduate student status. Oral reports by graduate students, faculty, and visiting scholars on current research topics in geological sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

GEO 251 (E-Z).
Advanced Topics in Paleontology. (3-5)
Seminar, three hours; laboratory, zero to six hours. Prerequisite(s): consent of instructor. Selected advanced topics from paleontology. Course content will vary from quarter to quarter. Flexible units (3, 4, or 5) allows the instructor to decide whether or not an individual student will be required to take the laboratory. Course is repeatable.

GEO 253. Advanced Topics in Petrology and Geochemistry. (3-5)
Seminar, three hours; laboratory, zero to six hours. Prerequisite(s): consent of instructor. Advanced topics from petrology and geochemistry of igneous, metamorphic, and sedimentary rocks. Course content varies from year to year. Course is repeatable to a maximum of 6 to 10 units.

GEO 255. Advanced Topics in Sedimentary Petrology. (4)
Seminar, two hours; laboratory, six hours. Prerequisite(s): GEO 225A, GEO 225B. Selected advanced topics from sedimentary petrology and physical stratigraphy. Course content varies from year to year. Course is repeatable.

GEO 257 (E-Z).
Advanced Topics in Geophysics. (4)
Seminar, four hours. Prerequisite(s): consent of instructor. Selected advanced topics from geophysics. Course content varies from quarter to quarter. Courses are repeatable with separate letter designation.

GEO 259. Tectonics of California. (4)
Lecture, two hours; seminar, two hours. Prerequisite(s): consent of instructor: Geological, geophysical, and paleontological bases of interpreting tectonic development of California, with special emphasis on southern California. Interdisciplinary approach will be emphasized. Weekly reading assignments, active participation in discussions, and appropriate field and library research will be required. Participants will prepare two papers and give presentations.

GEO 268. Seminar in Biogeography. (4)
Seminar, two hours; research; six hours. Prerequisite(s): GEO 168B or consent of instructor. Topics from Mediterranean ecosystems, fire ecology, naturalization of exotic species, succession and ecosystem steady state theory, mapping of vegetation. Course is repeatable to a maximum of 8 units.

GEO 283 (E-Z).
Seminar in Advanced Topics in Systematic Geography. (4)
Seminar, two hours; research, six hours. Prerequisite(s): GEO 157 or consent of instructor. G. Location Analysis; H. Transportation Geography; I. Quantitative Geography.

GEO 290. Directed Studies. (1-6)
Prerequisite(s): consent of instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

GEO 297. Directed Research. (1-6)
Prerequisite(s): consent of instructor. Research for individual graduate students in geological sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

GEO 298M. Research for Master's Thesis. (1-12)
Research, three hours per unit. Prerequisite(s): consent of instructor. Thesis research. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

GEO 299P. Research for Dissertation. (1-12)
Research, three hours per unit. Prerequisite(s): consent of instructor. Research for dissertation, arranged in consultation with the staff. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PROFESSIONAL COURSES

GEO 301. Teaching of Geosciences at the College Level. (1)
Seminar, one hour. Prerequisite(s): graduate standing in Geosciences. A program of weekly meetings and individual formative evaluation required of new Teaching Assistants for Geosciences courses. Covers instructional methods and classroom/section activities most suitable for teaching Geosciences. Conducted by the Teaching Assistant Development Program. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

GEO 302. Teaching Practicum. (1-4)
Seminar, one to four hours; practicum, two to eight hours. Prerequisite(s): restricted to those graduate students appointed as Teaching Assistants: Supervised teaching of upper and lower-division courses in Geosciences. Required of all Teaching Assistants. Graded Satisfactory (S) or No Credit (NC). Course is repeatable for credit but units not applicable toward degree unit requirements.

ECONOMICS

Subject abbreviation: ECON

Stephen E. Cullenberg, Ph.D., Chair
Department Office, 121 Highlander Hall
(909) 787-5037
http://www.ucr.edu/CHSS/depts/econ/
econhome.htm

Professors
Taradas Bandyopadhyay, Ph.D.


Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The Economics Department offers a B.A. degree in Economics and a B.A. degree in Business Economics.

Economics Major

The major requirements for the B.A. degree in Economics are as follows:

1. Lower-division requirements (16 units)
   a) ECON 002, ECON 003
   b) MATH 009A-MATH 009B

2. Upper-division requirements (48 units)
   a) ECON 102A, ECON 102B
   b) ECON 103A, ECON 103B
   c) Either ECON 123/HISA 123 or ECON 125
   d) ECON 101/STAT 101 and ECON 107
   e) At least 20 additional upper-division units in Economics, including at least one course from ECON 171 through ECON 185

Note: No internship courses may be counted toward the upper-division electives in Economics. MATH 009A-MATH 009B may also be used to meet breadth requirements.

Economics/Administrative Studies Major

In order to receive the B.A. degree in Economics/Administrative Studies students must fulfill the following requirements:

1. Requirements for Economics (52 units)
   a) ECON 002, ECON 003
   b) ECON 102A, ECON 102B, ECON 103A
   c) Twenty-four (24) additional upper-division units in Economics
   d) ECON 101/STAT 101
   e) One of MATH 009A, MATH 022, or equivalent

2. Requirements for Administrative Studies as specified by the advisory committee for the Administrative Studies program (37 units)
   a) Four lower-division courses (17 units)
      (1) BSAD 010 and BSAD 020A
      (2) STAT 048 or equivalent (may be used to satisfy breadth requirements)
      (3) CS 008 (may be used to satisfy breadth requirements)
   b) Two upper-division courses (8 units) from the list below:
      (1) ECON 102A or ECON 130 or BSAD 162/ECON 162
      (2) PSYC 140 or PSYC 142/BSAD 142
      (3) SOC 150/BSAD 150 or SOC 151/BSAD 151 or SOC 171
      (4) POSC 181 or POSC 182/BSAD 182 or POSC 183
      (5) ANTH 127 or ANTH 131

These two courses must be outside the discipline of the cooperating major and cannot be courses included as part of the three course Business Administra-
tion track or their cross-listed equivalents.

- A three-course track (12 units) in Business Administration courses, from one of the following:
  - Economics/Law and Society courses.

- A dual major, students may not count more than two courses toward both parts of their total requirements.

- Students must count more than two of the courses taken to meet this requirement [2.d] may be from the same department.

- Economists and economists may be replaced by a substitute choice from a list of courses published annually by the Law and Society Faculty Committee.

- These courses may be replaced by a substitute choice from a list of courses.

- One course chosen from the following:
  - ECON 111, PSYC 012, SOC 110A, PHIL 183, POSC 167, SOC 159 (One of these courses may be replaced by a substitute choice from a list of courses published annually by the Law and Society Faculty Committee. Not more than two of the courses taken to meet this requirement [2.d] may be from the same department.)

- BSAD 157

- BSAD 150/SOC 150, BSAD 152/ECON 152, BSAD 153/ECON 153, BSAD 155, BSAD 157

- BSAD 142/PSYC 142, BSAD 152/ECON 152, BSAD 153/ECON 153, BSAD 155, BSAD 157

- BSAD 110, and two from BSAD 112, BSAD 113, BSAD 114, BSAD 117

- BSAD 166, BSAD 168A, BSAD 168B

- BSAD 134/ECON 134 and two from BSAD 135A, BSAD 136, BSAD 137, BSAD 138, BSAD 139

- Management Information Systems: BSAD 170, BSAD 171, BSAD 173

- BSAD 121/STAT 121, and two from BSAD 122, BSAD 126, BSAD 127/STAT 127

Note: In filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements. (This limitation applies to specified Economics requirements and Law and Society requirements.)

Minor

The minor in Economics provides a background in this discipline. Students take basic microeconomic and macroeconomic theory courses, and then are given freedom of choice in pursuing upper-division courses of great interest.

All candidates for the minor in Economics are required to take

1. Lower-division requirements (8 units)
   - ECON 002, ECON 003
2. Upper-division requirements (24 units)
   - ECON 102A, ECON 103A
   - Four additional upper-division courses (16 units) in Economics

See Minors Under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

GRADUATE PROGRAM

The graduate Economics program is designed to prepare students for research and teaching in academic institutions as well as for positions in government, international agencies, and the private sector.

Doctoral Degree

The Ph.D. is the primary degree objective of the graduate program. Students first complete a core curriculum in economic theory and quantitative methods. These courses provide training in the fundamental concepts and research methods of the discipline. Following demonstration of professional competence in the core areas, students specialize in theoretical or applied areas of economics. This leads to the development of independent research and the writing of the Ph.D. dissertation.

Master's Degree

The M.A. degree is designed as a preparatory program for those students interested in pursuing the Ph.D. but who are not adequately prepared to enter the Ph.D. program directly (e.g., students who lack the necessary prerequisites in economics or mathematics or students who have been out of school for some time).

Admission

Students are normally admitted only in the fall quarter. Application forms may be obtained from the Department of Economics, Highlander Hall, University of California, Riverside, Riverside, CA 92521. The completed application, Graduate Record Examination (GRE) scores, three letters of recommendation (from persons familiar with the student's academic work), and transcripts in duplicate of previous academic work must be sent to the Department. Candidates for degrees are required to complete all general University requirements as specified in the Graduate Studies section of this catalog.

Doctoral Program. The Department encourages applicants from a variety of backgrounds, but a good understanding of intermediate microeconomics, intermediate macroeconomics, multivariate calculus, and elementary linear algebra is necessary to begin taking the core requirements, described below. In addition, two courses in basic probability and statistics or econometrics are required before beginning the core economics sequence. Students who do not satisfy the requirements, or who have been out of school for several years, should consider enrolling in the one-year M.A. program.

Master's Program. Students should have first-year calculus, a course in statistics, and some background in economics before beginning course work. Students who do not meet these requirements may still be admitted but normally must take these courses as prerequisites to the required courses. Applicants to the M.A. program are expected to have the same academic potential as Ph.D. applicants, as reflected by grade point average and GRE scores. Admission to the M.A. program does not guarantee later admission to the Ph.D. program.
Requirements for the Doctoral Degree

Core Requirements

1. Economic Theory
   Students must complete the following courses:
   a) ECON 200A-ECON 200B-ECON 200C (Microeconomic Theory)
   b) ECON 201A-ECON 201B-ECON 201C (Macroeconomic Theory)
   c) ECON 202A (Topics in Economic Theory: Critiques and Alternative Approaches) or ECON 202B (Topics in Economic Theory: Applications)
   d) ECON 212 (History of Economic Theory and Methodology)

   All students must pass comprehensive examinations consisting of two parts—one in microeconomic theory and the other in macroeconomic theory. The examination covers the topics encompassed in the courses ECON 200A-ECON 200B-ECON 200C and ECON 201A-ECON 201B-ECON 201C, but is not limited to the specific material covered in these courses. Every student must take the comprehensive examination in the beginning of the fall quarter of their second year. In case a student fails that examination, the student will have one more opportunity to take the examination; this second examination will be in the beginning of the winter quarter of the student’s second year. Copies of the exact rules regarding the comprehensive examination are available in the office of the Department of Economics.

2. Quantitative Methods
   Students must complete the following courses:
   a) ECON 205A, ECON 205B, ECON 205C (Econometric Methods I, II, III)
   b) ECON 206 (Mathematics for Economists)

   To satisfy these course requirements students must attain a “B” grade in the ECON 200A-ECON 200B-ECON 200C, ECON 201A-ECON 201B-ECON 201C, ECON 205A, ECON 205B, ECON 205C sequences. They also must receive a grade of “B-” or better in ECON 202A or ECON 202B, ECON 212, and ECON 206. Core courses may be waived, based on equivalent graduate work completed elsewhere. The comprehensive examinations, however, may not be waived.

Field Requirements

All students must complete course work by taking one of the following options:

Option 1: Students must complete course work in two fields and pass a comprehensive field examination in the field they designate as their major field. Students must take at least three courses in each of both fields.

Option 2: Students must complete course work in one major field consisting of three courses and two fields consisting of two courses each. Students must pass a comprehensive examination in their major field.

Required of all students: Students must write an original research paper which must be approved by the Graduate Affairs Committee.

Field comprehensive examinations are given twice a year. No one course may be used to satisfy the course requirements of two fields:

1. Advanced Econometrics
   Students must complete the courses (a) and (b) and one of the courses from (c), (d), (e), or (f) listed below.
   a) ECON 285E (Advanced Econometric Methods)
   b) ECON 285F (Topics in Econometrics)
   c) ECON 285G (Applied Econometrics)
   d) ECON 285-I (Macroeconometrics)
   e) ECON 285J (Nonparametric Econometrics)
   f) ECON 285K (Microeconometrics)

2. Advanced Macroeconomic Theory
   Students must complete the following courses:
   a) ECON 282E (Foundations of Macroeconomics)
   b) ECON 282F (Advanced Monetary Theory)
   c) ECON 282G (Special Topics in Macroeconomic Theory)

3. Advanced Microeconomic Theory
   Students must complete three of the following courses:
   a) ECON 283E (Rational Choice Theory)
   b) ECON 283F (Measurement and Aggregation in Economics)
   c) ECON 283G (General Equilibrium)
   d) ECON 283I (Social Choice and Welfare)
   e) ECON 283J (Uncertainty and Information)
   f) ECON 283K (Special Topics in Microeconomic Theory)

4. Advanced Political Economy
   (Former Marxian and Comparative Fields)
   ECON 202A (Topics in Economic Theory: Critiques and Alternative Approaches) is recommended.

   Students must complete three of the following courses:
   a) ECON 272A (Political Economy: Marxian Economics)
   b) ECON 272B (Political Economy: Efficiency, Justice, and Power)
   c) ECON 272C (Political Economy: Comparative Political Economy)
   d) ECON 271 (Radical Political Economy)
   e) ECON 279 (Political Economy: Advanced Topics)

5. Development Economics
   Students must complete three of the following courses:
   a) ECON 215 (Applied Quantitative Methods in Development Economics)
   b) ECON 260 (Theories of Economic Development)
   c) ECON 261 (Contemporary Development Strategies)
   d) ECON 262 (Project Evaluation in Developing Countries)
   e) ECON 265 (Agricultural and Rural Development)
   f) ECON 266 (The Political Economy of Imperialism)

6. International Trade Theory
   Students must complete the following courses:
   a) ECON 234 (International Trade Theory)
   b) ECON 235 (Topics in International Trade Theory)

7. Labor Economics
   Students must complete the following courses:
   a) ECON 240 (Labor Supply, Labor Demand, and the Structure of Wages)
   b) ECON 241 (Labor Institutions and Macro Labor Outcomes)
   c) ECON 243 (Topics in Labor)

8. Money, Credit, and Business Cycles
   Students must complete three of the following courses:
   a) ECON 250 (Money, Credit, and the Macroeconomy)
   b) ECON 251 (Business Cycle Theory)
   c) ECON 252 (Fiscal Policy, Employment, and Capital Accumulation)
   d) ECON 254 (Topics in Money, Credit, and Business Cycles)
Course Requirements

Students must complete a total of 36 units, 24 of which must be at the graduate level. The following courses are required of all students:

1. ECON 110 (Mathematical Economics) or ECON 206 (Mathematics for Economists)
2. ECON 204A (Microeconomic Theory for Master’s Students) or ECON 200A-ECON 200B (Microeconomic Theory)
3. ECON 204B (Macroeconomic Theory for Master’s Students) or ECON 201A-ECON 201B (Macroeconomic Theory)
4. ECON 107 (Introductory Econometrics I) and ECON 108 (Introductory Econometrics II), or ECON 205A (Econometric Methods I) and ECON 205B (Econometric Methods II)

5. ECON 212 (History of Economic Theory and Methodology)

Comprehensive Examination Requirement

Students must pass one of the following examinations:

1. Master’s Examination covering the topics in ECON 204A, ECON 204B
2. Doctoral Comprehensive Examination in either microeconomic theory or macroeconomic theory (graded at the master’s level)
3. Doctoral Comprehensive Examination in any of the nine fields described above (graded at the master’s level)

LOWER-DIVISION COURSES

ECON 001. Introduction to Economics. (4)
Lecture, three hours; discussion, one hour. Examines the history of economic institutions, the ideas of the great economists, and selected contemporary issues.

ECON 002. Introduction to Macroeconomics. (4)
Lecture, three hours; discussion, one hour. An introduction to the study of the economic system from a macro, or aggregate, perspective. Includes an analysis of unemployment, inflation, and the impact of government policies on the level of economic activity.

ECON 003. Introduction to Microeconomics. (4)
Lecture, three hours; discussion, one hour. An introduction to the study of the economic system from the micro, or individual decision-maker’s, perspective. Includes analysis of competition, monopoly, and the distribution of income. Credit is awarded for only one of ECON 003 or ECON 003H.

ECON 003H. Honors Introduction to Microeconomics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ECON 003. An introduction to the study of the economic system from the micro, or individual decision-maker’s, perspective. Includes analysis of competition, monopoly, and the distribution of income. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ECON 003 or ECON 003H.

ECON 006. Introduction to Environmental Economics. (4)
Lecture, three hours; discussion, one hour. An introduction to the basic principles of economics and their application to problems of environmental quality and natural resource utilization. Emphasis is on the failure of markets as a cause of environmental degradation and the role of government in resolving problems of resource scarcity. Cross-listed with ENVC 106. This course does not satisfy the Natural Sciences requirement for the College of Humanities, Arts, and Social Sciences.

UPPER-DIVISION COURSES

ECON 100A. Analytical Microeconomics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 003, MATH 009A or MATH 022; or consent of instructor. Provides a comprehensive discussion of the competitive market system, modern utility theory of consumer behavior, firm behavior in product and factor markets, and monopoly. Uses calculus as the basic tool of analysis. Credit is awarded for only one of ECON 100A or ECON 102A.

ECON 100B. Analytical Microeconomics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 100A or consent of instructor. A continuation of ECON 100A. Covers imperfect competition, general equilibrium, welfare economics, intertemporal decision-making, uncertainty, information, and uses calculus as the basic tool of analysis. Credit is awarded for only one of ECON 100B or ECON 102B.

ECON 101. Statistics for Economics. (4)
Lecture, three hours; discussion, one hour. Laboratory, one hour. Prerequisite(s): MATH 005. An introduction to the basic statistical methods for economics. Topics include economic data analysis, index numbers, univariate and bivariate probability distributions, correlation and regression, sampling distributions, properties of estimators, and hypothesis testing. Cross-listed with STAT 101.

ECON 102A. Microeconomic Theory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 003 or consent of instructor. MATH 009A or MATH 022 strongly recommended. A comprehensive discussion of the competitive market system, modern utility theory of consumer behavior, firm behavior in product and factor markets, and monopoly. Credit is awarded for only one of ECON 100A or ECON 102A.

ECON 102B. Microeconomic Theory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 102A or consent of instructor. A continuation of ECON 102A. Covers imperfect competition, general equilibrium, welfare economics, intertemporal decision making, uncertainty, information, and use of calculus as the basic tool of analysis. Credit is awarded for only one of ECON 100B or ECON 102B.

ECON 103A. Macroeconomic Theory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 102A or consent of instructor. A continuation of ECON 102A. Covers imperfect competition, general equilibrium, welfare economics, intertemporal decision making, uncertainty, information, and use of calculus as the basic tool of analysis. Credit is awarded for only one of ECON 100B or ECON 102B.

ECON 103B. Macroeconomic Theory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 103A. ECON 102A recommended. The theory of money growth, inflation, business cycles, and stabilization policy. The role of money and credit. The micro-foundations of consumption and investment. Selected policy debates. Introduction to alternative macroeconomic theories.

ECON 104. Data Analysis for Economics and Business. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002, ECON 003; or consent of instructor. Introduction to the sources of economic and business data and data analysis using graphs, plots, computers, and descriptive statistics. Index numbers, measures of inequality, and simple regression analysis are also introduced.
ECON 107. Introductory Econometrics I. (4)
Lecture, three hours; discussion, one hour; laboratory, one hour. Prerequisite(s): ECON 002 or ECON 003 or ECON 003H, ECON 101/STAT 101; or consent of instructor. An introduction to the basic tools of econometrics. Focuses on the issues relating to the linear regression model, including heteroskedasticity, serial correlation, and multicollinearity.

ECON 108. Introductory Econometrics II. (4)
Lecture, three hours; discussion, one hour; laboratory, one hour. Prerequisite(s): ECON 107 or consent of instructor. A continuation of ECON 107. Covers, at an introductory level, the basic concepts related to logit and probit models, simultaneous equations models, dynamic time series models, unit roots and Auto-Regressive Conditional Heteroskedasticity (ARCH), and forecasting.

ECON 109. Topics in Applied Econometrics. (4)
Lecture, three hours; laboratory; three hours; term paper, two hours. Prerequisite(s): ECON 102A, ECON 103A, ECON 107, ECON 108B; or consent of instructor. Covers several applied topics such as estimation of production and consumption functions, estimation of demand equations, investment function, and wage equation.

ECON 110. Mathematical Economics. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 102A, MATH 009A-MATH 009B. The use of mathematical tools to analyze economic problems, with emphasis on linear algebra and differential calculus. Applications to comparative statistics and optimization problems.

ECON 111. Research Methods in Business and Economics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 002 or ECON 003 or ECON 003H. Introduction to research methods in business and economics. Topics include the scientific method and notions of progress in science, problems of research design, data sources and data gathering techniques, the case study method, and measurement and interpretation of business and economic data.

ECON 112. Forecasting in Business and Economics. (4)
Lecture, three hours; discussion, one hour; laboratory, one hour. Prerequisite(s): ECON 002, ECON 003, ECON 101/STAT 101, ECON 107. Provides a basic knowledge of forecasting and its applications, particularly by using business and economic data. Explores how recurrent fluctuations in economic activity create an environment of uncertainty; how to reduce the costs of this uncertainty; and how to use available information to forecast future events. Several methods of forecasting are reviewed such as regression methods, exponential smoothing algorithms, and ARIMA methods, including how to combine and evaluate various forecasts. Computer applications are used extensively.

ECON 113. The Political Economy of Latin America. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examination of reform and revolution, dependency and autonomy, state planning and markets; import substitution and multinationals; bureaucratic centralism and participatory democracy: inflation and debt; transitions to capitalism and socialism.

ECON 115. Marxist Political Economy. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Fundamental concepts of Marxist political economy including historical materialism, surplus value, exploitation, class analysis, economic crises, the state, socialism, and Marxist methodological foundations.

ECON 116. Foundations of Political Economy. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Explores ways of thinking about economic and social issues precluded by conventional approaches to economic analysis. Topics include the class relations between labor and capital, discrimination, market socialism, and alternative perspectives on development, macroeconomic stability, and the environment.

ECON 117. Economics and Philosophy. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 003 or ECON 003H or consent of instructor. Examines issues on the boundary of economics and philosophy. Topics include social choice theory and economic justice; foundations of utility theory, rational choice, and economic welfare; epistemology and the philosophies of science of Popper, Kahn, and others. Cross-listed with PHIL 119.

ECON 118. The Contemporary United States Economy. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002, ECON 003. Provides a broad survey of issues relating to the development of the U.S. economy and especially its contemporary structure. Incorporates issues relating to both macro- and microeconomic phenomena, with a focus on questions that are of particular relevance to current policy.

ECON 119. Law and Economics. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): ECON 002 or ECON 003 or ECON 003H or consent of instructor. An economic analysis of legal institutions and their evolution, including the areas of property law, contract law, tort law, and criminal law.

ECON 120. The Great Economists. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. In-depth study of selected influential writers or a school of writers on economics or political economy. Emphasis will focus on selected writers’ relations to other schools and other writers.

ECON 123. American Economic History. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Covers economic history of the United States from colonial times to the present. Cross-listed with HISP 123.

ECON 125. History of Economic Thought. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002, ECON 003. Study of the development of major economic theories, including those of Adam Smith, Karl Marx, and John Maynard Keynes. Focus on how alternative theories define and address economic problems differently, and the policy implications which follow.

ECON 130. Introduction to Money, Banking, and Credit. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 002. Basic theories of the operations of modern monetary systems: money, credit, and interest rate behavior; financial intermediation and central banking methods; and objectives of monetary and regulatory policy.

ECON 131. Money, Credit, and Economic Policy. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 130 or consent of instructor. Examines alternative perspectives on monetary theory and financial institutions. Contemporary fiscal and monetary policy debates are investigated.

ECON 132. Public Finance. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 102A and ECON 103A, ECON 130 or ECON 134/BSAD 134 recommended. Functions of government in a market economy: distributive equity, taxation, spending, borrowing, and debt management. Promotion of capital formation, full employment, stability, and efficient resource use. Intergovernmental relations.

ECON 133. Business Cycles and Credit. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002. Discussion of theories of the business cycle. Extensive consideration of the empirical data on the business cycle.

ECON 134. Corporate Finance and Investment. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 003 or ECON 003H, upper-division standing. BSAD 130A and BSAD 130B recommended. Covers the foundation materials for both corporate financial management, and investment and portfolio analysis. Topics include time value of money, capital budgeting, capital structure, dividend policy, portfolio theory, CAPM, and market efficiency. Cross-listed with BSAD 134.

ECON 135. The Stock Market. (4)
Lecture, three hours; discussion, one hour; individual study, three hours. Prerequisite(s): ECON 002, ECON 003 or ECON 003H. An analysis of the history of the stock market and its role in the macroeconomy. Topics include factors governing stock prices, fundamental and technical analysis, the impact of inflation and interest rates, international investing, and the role of social institutions in the determination of stock prices.

ECON 143A. Environmental Economics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 003, MATH 022 or equivalent; or consent of instructor. Introduction to economic analysis of natural resources and the environment with emphasis on environmental quality. Topics include environment-economy interactions and social choice theory; source control costs, damage valuation, and efficient pollution control; and design of efficient and equitable environmental policy. Cross-listed with ENSC 143A.

ECON 143B. Natural Resource Economics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 143A/ENSC 143A or consent of instructor. Considers the extraction and use of natural resources. Topics include land use and natural capital economics and valuation; economics of mineral and nonrenewable resources including recycling; and managing biological and renewable resources, including common property, efficient usage, and regulation. Cross-listed with ENSC 143B.

ECON 143C. Ecological Economics and Environmental Valuation. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 143A/ENSC 143A or consent of instructor. Survey of environmental valuation and economic models of the environment and sustainability, including the economics of environmental spillovers; ENSC 143A recommended. Cross-listed with ENSC 143C.
ECON 146. Urban Economic Problems. (4)
Lecture, three hours; term paper, one hour. Prerequisite(s): ECON 003 or consent of instructor. The application of economic principles to the major problems of the modern urban community such as poverty, discrimination, deterioration of environment and housing problems. Programs for alleviation or solution. Cross-listed with UNIST 146.

ECON 148. Land and Resource Economics. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 102A. Distinctive qualities of land and its rent; valuation of land as an investment. Assembly division, and development of land; efficiency of land market and effects of taxation. Concentrated ownership, separation of ownership and management, rent and taxable surplus, and origins and kinds of tenure.

ECON 152. Economics of Labor Relations. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002, ECON 003. An analysis of the history of labor and industrial relations in the U.S. with emphasis on problems of collective action, long-sweeps of economic growth, income inequality, and the role of government. Cross-listed with BSAD 152.

ECON 153. Labor Economics. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 102A. An analysis of labor demand, labor supply, and the structure of wages. Neoclassical, institutional, and radical perspectives emphasized. Cross-listed with BSAD 153.

ECON 155. Women's Labor and the Economy. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002 and ECON 003. Focuses on economic analyses of four topics: women's work in and out of the paid labor force; gender differences in occupation, earnings, and income; marriage, divorce, and childbearing; and public policy regarding women's work and standard of living. Differences among women by race, ethnicity, class, marital status, and parental responsibilities are explored. Cross-listed with WMST 155.

ECON 156. Population Dynamics and Economic Well-being. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002, ECON 003. Examines the causes and consequences of population dynamics. Economic models of such demographic behavior as fertility, mortality, marriage, and migration are presented. Consequences of population change for economic growth, the environment, and well-being are discussed.

ECON 160. Industrial Organization. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 102A. A study of the organization and structure of the American industrial system with emphasis on its production and pricing behavior and policies, its market structure, and public policies regulating or influencing its market behavior. Cross-listed with BSAD 160.

ECON 162. Managerial Economics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 003. ECON 102A recommended. Applications of economic analysis to problems of management, especially of capital. Emphasis on production economics and cost analysis. Cross-listed with BSAD 162.

ECON 163. Economics and Business Strategy. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 100A and ECON 100B or ECON 102A and ECON 102B; ECON 101/STAT 101; ECON 103A. An analysis of the relationship between economic theory and business strategy, including the competitive structures and patterns of regulatory oversight, in different U.S. industries. Basic concepts of game theory are used to understand strategic business behavior and are applied to actual case studies.

ECON 171. International Finance. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002. International monetary theory and its applications. Topics include balance of payments; exchange rates; open-economy macroeconomics; international monetary institutions. Selected policy issues addressed.

ECON 175. Comparative Analysis of Economic Systems. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 003 or ECON 003H. A study of the pure theory of trade, trade policy, and international factor movements including illustrative applications to current issues and problems. Cross-listed with BSAD 178.

ECON 178. International Trade. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 003 or ECON 003H. A study of the theory of comparative advantage as a guide to the major development strategies and policies.

ECON 180. Transition from Socialism to Capitalism. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002, ECON 003 or ECON 003H; consent of instructor. Examines the transition from central planning to a market-oriented economic system in China and Eastern Europe. The countries of the former Soviet Union, China, Mongolia, and Vietnam. Evaluates transitional strategies using China and Russia as the key examples.

Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 102, ECON 103A. A survey of the main theories of economic development and an analysis of the major development strategies and policies.

ECON 182. Trade, Globalization, and Development. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002, ECON 003 or ECON 003H. Explores the theory of comparative advantage as a guide to trade development policy. Discusses trade regimes and their effects on development. Analyzes the nature and consequences of the globalization of the world economy.

Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative analysis of the patterns and policies of development under different social systems (e.g., laissez-faire capitalism in the nineteenth century; contemporary capitalism, socialism, and mixed economy).

ECON 185. Economic Development in Latin America. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 002, ECON 003. A comparative analysis of the major trends in Latin American economies since 1945. Topics include the theory and practice of import substitution, industrialization, the debt crisis, stabilization and structural adjustment, regional integration, poverty and income distribution, the informal sector, the agricultural sector, and the environment.

ECON 190. Special Studies. (1-5)

ECON 193A-193B. Senior Seminar. (4-4)
Seminar, three hours; individual study, three hours. Prerequisite(s): senior standing; ECON 102A, ECON 102B, ECON 103A, and ECON 103B. Advanced research in various fields of faculty interest. Students will be required to complete a research paper and present their results in the seminar. Topics will vary from year to year. The final grade will be deferred until completion of the sequence of work.

ECON 198-I. Individual Internships in Economics. (1-12)
Prerequisite(s): junior standing with major in Economics and consent of instructor (to be obtained before pre-enrollment). Active participation in the work of a public or quasi-public agency or business concern in matters relating to general or business economics. The student spends approximately 10 hours each week with such an employer. A summary paper is required. One unit for every three hours spent in internship. Open to majors on a Satisfactory (S) or No Credit (NC) basis.

ECON 200A. Microeconomic Theory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 102A and ECON 102B or equivalents; ECON 206. Focuses on consumer and producer theory under conditions of certainty.

ECON 200B. Microeconomic Theory. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 200A or equivalent. Focuses on decision making under uncertainty: economics of information, applications of game theory, and models of imperfect competition.

ECON 200C. Microeconomic Theory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 103A and ECON 103B or equivalents; ECON 206 (may be taken concurrently). Examines the basic issues and models of macroeconomics.

ECON 201. Macroeconomic Theory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 100A and ECON 100B or ECON 102A and ECON 102B; ECON 101/STAT 101; ECON 103A. An analysis of the relationship between economic program and growth, the role of government in the economy, and the effects of monetary and fiscal policy. Cross-listed with BSAD 201.

ECON 201A. Macroeconomic Theory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 103A and ECON 103B or equivalents; ECON 206 (may be taken concurrently). Examines the basic issues and models of macroeconomics.
ECON 202A. Topics in Economic Theory: Critiques and Alternative Approaches. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing. Critiques of conventional economic theories and consideration of alternative theories and approaches to issues of aggregate economic growth and instability from Marx to the present.

ECON 202B. Topics in Economic Theory: Applications. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 200A-ECON 200B-ECON 200C; ECON 201A-ECON 201B-ECON 201C; ECON 205A-ECON 205B-ECON 205C. Application of the theories and methods covered in ECON 200A-ECON 200B-ECON 200C and ECON 201A-ECON 201B-ECON 201C sequences to real-world problems, including (1) the specification of functional form and the estimation of supply and demand systems, (2) index number theory and the measurement of inflation, the cost of living, output, and other macroeconomic phenomena, (3) computable general equilibrium models, (4) programming methods, (5) problems of aggregating over agents and commodities, and (6) the measurement of economic phenomena like productivity, poverty, income and wealth distribution, technical and allocative inefficiencies, and input substitutability.

ECON 205A. Econometric Methods I. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 102A and ECON 103A; MATH 009A; MATH 010A; MATH 012A, MATH 012B, or equivalents. Econometric methods for the analysis of economic data and the construction of econometric models with applications to microeconomics and macroeconomics. Covers the linear regression model and related techniques of matrix algebra, statistical estimation, and inference.

ECON 205B. Econometric Methods II. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 205A or equivalent. Econometric methods for the analysis of economic data and the construction of econometric models with applications to microeconomics and macroeconomics. Covers the linear regression model and related techniques of matrix algebra, statistical estimation, and inference.

ECON 205C. Econometric Methods III. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 205B or equivalent. Econometric methods for the analysis of economic data and the construction of econometric models with applications to microeconomics and macroeconomics. Covers the linear regression model and related techniques of matrix algebra, statistical estimation, and inference.

ECON 206. Mathematics for Economists. (4)
Lecture, three hours; discussion, one hour; individual study, three hours. Prerequisite(s): MATH 009A-MATH 009B. An introduction to the mathematical tools of linear algebra, matrices, vectors, and differential calculus. The course provides a foundation for the study of microeconomics and macroeconomics.

ECON 207. Environmental Economics. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 200A or ECON 206 or equivalent. Theory and methods of environmental economics. Environmental quality, externalities, bargaining solutions, property rights, and resource allocation mechanisms. Environmental policy under uncertainty and asymmetric information. Dynamic and general equilibrium models of environmental quality. Empirical studies and methods.

ECON 208. Models of Nonrenewable Resource Management. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 200A or ECON 206 or equivalent. Dynamic models of nonrenewable resources. Uncertainty, game theory, and the measurement of resource scarcity. Examination of empirical models of nonrenewable resources.

ECON 209. Models of Renewable Resource Management. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 200A, ECON 205A or equivalent. ECON 206. Study of economic valuation of natural resources and the environment. Includes topics such as environmental demand theory, travel cost models, random utility models, discrete choice models, the contingent valuation technique, and hedonic wage and pricing models. Covers theory, empirical methods, and applications.

ECON 212. History of Economic Theory and Methodology. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. The origins and contemporary development of alternative economic theories. Methodological and philosophical debates in economics.

ECON 215. Applied Quantitative Methods in Development Economics. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. Construction of national income and other macroeconomic accounts, input-output accounts, sample survey methods, and other empirical techniques.

ECON 230. Industrial Organization. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 200A, ECON 200B, ECON 200C, or consent of instructor. Determinants of trade and prices. An in-depth study of theories of the cycle and the behavior of economic agents.

ECON 235. Topics in International Trade Theory. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ECON 234 or consent of instructor. An in-depth study in selected areas of international trade theory. Topics include, but are not limited to, trading blocks, trade agreements and strategic interactions, trade and the environment, and the political economy of international trade. Course is repeatable to a maximum of 8 units.

ECON 240. Labor Supply, Labor Demand, and the Structure of Wages. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. Course introduces students to the theoretical and empirical literature on labor supply and demand and on the structure of wages. The contributions of neoclassical, institutional, and radical economists will be discussed.

ECON 241. Labor Institutions and Macro Labor Outcomes. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. A historical perspective on the labor market, including theories of collective bargaining, labor unions, and government, and their relation to macro labor outcomes such as income distribution, productivity growth, and unemployment.

ECON 243. Topics in Labor. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. An in-depth study in selected areas of labor economics. Topics include, but are not limited to, economic demography and race and gender issues. Course is repeatable as topic changes.

ECON 250. Money, Credit, and the Macroeconomy. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. An in-depth treatment of theories of the cycle and empirical data on relations of variables over the cycle.

ECON 252. Fiscal Policy, Employment, and Capital Accumulation. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing. This course will cover governmental taxing, spending, and debt, especially their effects on capital formation, income distribution, and employment.

ECON 254. Topics in Money, Credit, and Business Cycles. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. An in-depth treatment of theories of the cycle and empirical data on relations of variables over the cycle.

ECON 258 (E-Z). Seminar in Resource Economics. (4)
Seminar, three hours; research, three hours. Prerequisite(s): graduate standing. An in-depth treatment of theories of the cycle and empirical data on relations of variables over the cycle.

ECON 260. Theories of Economic Development. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. A survey of the major theories of development and underdevelopment with the classical model, theories of surplus, and including the works of Lewis, Nurkse, Hirschman, neoclassical schools, structuralist models, and dependency theory.

ECON 261. Contemporary Development Strategies. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. A review of the performance of the major strategies of development implemented in the recent past or currently under implementation.

ECON 262. Project Evaluation in Developing Countries. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. The rationale for social benefit-cost analysis of projects in developing countries. Estimation of shadow prices to replace the distorted market prices in evaluating pro-
j ect profitability. The role of income distribution, external-
ity, and uncertainty in project evaluation.

ECON 264. Topics in Economic Development. (4)
Seminar; three hours; individual study three hours. Pre-
requisite(s): graduate standing or consent of instruc-
tor. Selected themes for advanced study in economic develop-
ment. Course is repeatable to a maximum of 8 units.

ECON 265. Agricultural and Rural Development. (4)
Seminar; three hours; individual study three hours. Pre-
requisite(s): graduate standing or consent of instruc-
tor. This course is concerned with the economics of agri-
cultural and rural development in developing countries.
Topics examined include technical change, sharecropping
and interlinked factor markets, migration, poverty and
famine, land reform, environmental aspects of rural devel-
opedment, and structural adjustment within agriculture.

ECON 266. The Political Economy of Imperialism. (4)
Seminar; three hours; individual study three hours. Pre-
requisite(s): graduate standing or consent of instruc-
tor. A survey of the methodology of radical political econ-
omy and an examination of its logical, empirical, and nor-
matives bases.

ECON 272A. Political Economy: Marxian Economics. (4)
Seminar; three hours; individual study three hours. Pre-
requisite(s): graduate standing or consent of instruc-
tor. A study of Marxian economic theory, including histori-
cal materialism, the role of value, class, exploitation,
and accumulation in Marxian economics, and a survey of cur-
rent debates on these issues.

ECON 272B. Political Economy: Efficiency, Justice, and Power. (4)
Seminar; three hours; individual study three hours. Pre-
requisite(s): graduate standing or consent of instruc-
tor. Covers the various notions of efficiency used in politi-
cal economic analysis, as well as their application in his-
torical and comparative institutional contexts. Theories of
justice in the distribution of rewards and the extent to
which efficiency is separable from justice. Different noti-
ons of how power influences economic outcomes.

ECON 272C. Political Economy: Comparative Political Economy. (4)
Seminar; three hours; individual study three hours. Pre-
requisite(s): graduate standing or consent of instruc-
tor. Explores economic institutions and various method-
ological approaches to economics from a comparative
perspective. Topics include types of capitalisms, market-
oriented, welfare-state, and the East Asian model, transi-
tional economics, and market socialism. Institutional,
socioeconomic, and radical political economy approaches
to economic analysis are also discussed.

ECON 278. The Political Economy of the State. (4)
Seminar; three hours; individual study three hours. Pre-
requisite(s): graduate standing or consent of instruc-
tor. Examination of theories of the capitalist state: Marxist,
non-Marxist, and post-Marxist. Assessment of theory
through case studies of advanced industrial and third
world societies.

ECON 279. Political Economy: Advanced Topics. (4)
Seminar; three hours; individual study, three hours. Pre-
requisite(s): graduate standing or consent of instruc-
tor. Topics in the methodology and theory of political econ-
y. Repeatable to a maximum of 6 units.

ECON 281A-ECON 281B-ECON 281C. Workshop in Political Economy (2-2-2)
Seminar; two hours; individual study two hours. Pre-
requisite(s): graduate standing. Reading and discussion of
selected topics in political economy; presentation and dis-
cussion of student papers and current faculty research in
the area. Graded Satisfactory (S) or No Credit (NC).

ECON 282. Advanced Macroeconomic Theory. (4)
Seminar; three hours; outside research, three hours. Pre-
requisite(s): passing grade on the macroeconomic
comprehensive examination or consent of instructor.
Covers advanced topics in macroeconomic theory. State-
of-the-art research papers and books will be read, and
presentations will be made by students as well as faculty.

ECON 283. Advanced Microeconomic Theory. (4)
Seminar; three hours; outside research, three hours. Pre-
requisite(s): passing grade on the microeconomic
comprehensive examination or consent of instructor.
Covers advanced topics in microeconomic theory. State-
of-the-art research papers and books are read, and presen-
tations are made by students as well as faculty. E. Rational
Choice Theory; F. Measurement and Aggregation in
Economics; G. General Equilibrium; I. Social Choice and
Welfare; J. Uncertainty and Information; K. Special Topics in
Microeconomic Theory. ECON 283K is repeatable to a
maximum of 8 units.

ECON 284. Topics. (4)
Seminar, one hour; outside research, three hours.
Prerequisite(s): graduate standing and consent of instruc-
tor. Designed to advise and assist candidates who are prepar-
ing for the Ph.D. qualifying examination.

ECON 285. Directed Studies. (1-6)
Prerequisite(s): consent of instructor. Each 285 course will
be taken concurrently with some 100-series course, but on
an individual basis. It will be devoted to completion of a
graduate paper based on research or criticism related to
the 100-series course. Faculty guidance and evaluation will
be provided through the quarter. Graded Satisfactory (S) or
No Credit (NC). May be repeated for credit.

ECON 290. Research for Thesis or Dissertation. (1-12)
Prerequisite(s): graduate standing and consent of instruc-
tor. Research in economics under the direction of a staff
member to be included as part of the doctoral disserta-

ECON 302. Teaching Practicum. (1-4)
Practicum, three to eleven hours; seminar, one hour. Pre-
requisite(s): limited to department TAs; graduate
standing. Supervised teaching in upper- and lower-division
courses. Required of all economics teaching assistants.
Graded Satisfactory (S) or No Credit (NC). May be repeat-
ed for credit.

Professor Blacher, Ph.D.
Robert C. Caffee, Ph.D., Douglas E. Mitchell, Ph.D.
Dorothy Hartley, Ph.D., Associate Dean
Janet B. Blacher, Ph.D., Assistant Dean
Sharon Duffy, Ph.D., Graduate Advisor
Dean's Office, 1207 Sproul Hall
Graduate Program (909) 787-5990
Credentialed Program (909) 787-5225
http://www.education.ucr.edu

ECON 284. Advanced Macroeconomic Theory. (4)
Seminar; three hours; outside research, three hours. Pre-
requisite(s): passing grade on the macroeconomic
comprehensive examination or consent of instructor.
Covers advanced topics in macroeconomic theory. State-
of-the-art research papers and books will be read, and presen-
tations will be made by students as well as faculty. E. Rational
Choice Theory; F. Measurement and Aggregation in
Economics; G. General Equilibrium; I. Social Choice and
Welfare; J. Uncertainty and Information; K. Special Topics in
Microeconomic Theory. ECON 283K is repeatable to a
maximum of 8 units.

ECON 285. Directed Studies. (1-6)
Prerequisite(s): consent of instructor. Each 285 course will
be taken concurrently with some 100-series course, but on
an individual basis. It will be devoted to completion of a
graduate paper based on research or criticism related to
the 100-series course. Faculty guidance and evaluation will
be provided through the quarter. Graded Satisfactory (S) or
No Credit (NC). May be repeated for credit.

ECON 290. Research for Thesis or Dissertation. (1-12)
Prerequisite(s): graduate standing and consent of instruc-
tor. Research in economics under the direction of a staff
member to be included as part of the doctoral disserta-

ECON 302. Teaching Practicum. (1-4)
Practicum, three to eleven hours; seminar, one hour. Pre-
requisite(s): limited to department TAs; graduate
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courses. Required of all economics teaching assistants.
Graded Satisfactory (S) or No Credit (NC). May be repeat-
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Master's Degree

Two types of M.A. degrees are available to students.

**Type A**— Education (with a cooperating department).

At present, 13 departments and programs are cooperating with the Graduate School of Education in this program. They include Anthropology, Biology, English, French, Geographical Sciences, German, History, Mathematics, Music, Political Science, Psychology, Sociology, and Spanish.

Candidates for this degree will complete the general University requirements and will follow Plan II, the Comprehensive Examination Plan. A minimum of 36 upper-division and graduate units are required, including a minimum of 18 units in Education and 18 in the cognate discipline. Baccalaureate level training in the cognate field is presumed. The candidate must pass comprehensive examinations in Education and the cognate field.

**Type B**— Education

Candidates enrolled in this program normally will have completed an undergraduate major or its equivalent in a subject field other than education. General areas of specialization for the M.A. include: Educational Administration, Special Education, Curriculum and Instruction, and Educational Psychology. Course requirements for the programs may be obtained from the Graduate Degree Program office, 1223 Sproul Hall. Any variance with existing program course work must be approved by the Graduate Advisory Committee.

Plan I (Thesis)

Under the thesis plan, students will complete a minimum of 36 upper-division and graduate units. At least 24 of these units will be in graduate courses. A minimum of 12 may be in graduate research for the thesis.

At the beginning of the second, and generally not later than the third quarter of full-time work, each candidate will submit a plan for the thesis to their committee. The plan will state the thesis topic, areas of knowledge, and research skills in which they wish to become competent at the master’s degree level. Each candidate will also list courses to be taken for developing competence in their area of specialization. The plan for the thesis will be reviewed and approved by a committee of three faculty members. Upon completion of the thesis, the candidate will submit it to this committee for approval. Upon successful completion of the thesis, the student will be recommended to the Graduate Division for the M.A. degree.

Plan II (Comprehensive Examination)

A minimum of 36 quarter units are required in upper-division and graduate undergraduate courses in Education and related fields as defined in existing programs. At least 18 of the 36 units will be in graduate courses, of which none will be in graduate research for the thesis.

A faculty member from the program area specialization shall be appointed by the Graduate Advisor to guide the candidate. A program plan must be filed with the Graduate Advisor by the end of the first quarter of residency. Any variation in this program plan from existing approved programs must be sanctioned by the Graduate Advisory Committee.

Upon or near completion of course work, the student will apply to take a comprehensive written examination. Upon successful completion of the comprehensive examination, the candidate will be recommended to the Graduate Division for the M.A. degree.

Doctoral Degree

The doctoral program is designed to prepare scholars for teaching and research in the area of education. Admission to the Ph.D. program is based on strong academic preparation at the baccalaureate level and a master’s degree in education such as those offered at UCR, or a master’s degree in an ancillary field.

General areas of specialization for the Ph.D. include Curriculum and Instruction, Educational Administration, Special Education, Educational Psychology, and School Psychology.

Following admission to the program, students are assigned a preliminary program advisor who guides them during the initial phase of their program. A common core curriculum is currently being developed. Within the first seven quarters of residence, students write a data-based or literature review paper. The faculty of each program area set up criteria and guidelines for the paper and judge its merits. Papers accepted by the program area group are presented in a public forum of faculty and students from the student's program area group. During this next phase of the doctoral program, students will be expected to pursue in-depth studies in at least two fields of concentration identified by the students and their guidance committee. Preparation in each field will consist of sufficient study to allow the students to grasp the essential concepts and inquiry methods of that field.

After or near completion of course work in the second phase and before being advanced to candidacy, the student will be required to pass qualifying examinations, both written and oral. The written examination will be prepared...
and evaluated by the program guidance committee, in consultation with faculty associated with the student’s area of specialization. It will require the student to
1. Review critically literature in an assigned field
2. Demonstrate competence in research methodologies, and
3. Demonstrate competence over content in fields of specialization.

There is also a Ph.D. teaching requirement which will be determined by the student’s program guidance committee. There is no foreign language requirement.

Following the written qualifying examination, and in advance of the oral qualifying examination, students develop a prospectus for a research proposal setting forth the direction of their proposed dissertation. Once this has been approved by the program guidance committee, the oral qualifying examination committee is appointed. This is a five-member faculty committee made up of the principal advisor, three faculty members from the Graduate School of Education and one faculty member from outside the School. The qualifying committee uses the prospectus as a focus for examining the student, but the questioning may go beyond the prospectus. Students pass the oral qualifying examination when the committee is satisfied that the prospectus, as well as the student's grasp of the theoretical and empirical issues at its core, leads in a productive direction toward a competent dissertation. Once the oral qualifying examination has been passed, a three member dissertation committee is appointed, and the student is recommended to the Graduate Division for advancement to candidacy.

Prior to commencing the dissertation research, students must have a dissertation proposal approved by a dissertation committee. Following completion of the dissertation, an oral defense will be scheduled by the chair of the candidate's committee. The dissertation must meet with the approval of the Dissertation Committee and the Graduate Council before the candidate is recommended for the degree.

The normative time to the Ph.D. degree is 15 quarters.

For further information concerning graduate degree programs in Education, write to the Graduate Advisor, Graduate School of Education, phone (909) 787-5990.

**Credential Programs**

The Graduate School of Education offers teaching credential programs and a program for the preparation of administrators. All of UCR’s programs for the credentialing of teachers and administrators are accredited by the California Commission on Teacher Credentialing. Admission to credential programs in the School is based upon grade point average and letters of recommendations from individuals knowledgeable about the candidate’s ability to succeed in professional study. Most programs also require an interview. Candidates for admission to the credential programs must submit verification of having passed the California Basic Educational Skills Test (CBEST) and are also required to submit verification of having met subject-matter proficiency either by completing a state-approved subject-matter preparation program, or by passing the appropriate state-approved subject-matter proficiency examinations. Students can learn more about the testing requirements by attending a credential information seminar and picking up a testing booklet from the rack in front of the Teacher Education Office, Sprout 1215.

**Program for the Preparation of Teachers**

The Graduate School of Education offers programs for the Multiple Subjects and Single Subject credentials, as well as Level I (Preliminary) and Level II (Professional) of the Education Specialist Credential in Mild/Moderate Disabilities and the Education Specialist Credential in Moderate/Severe Disabilities. All credential programs are offered as both student teaching programs and intern programs. The intern programs are for students with prior, substantive teaching experiences. Students interested in teaching are encouraged to attend one of the regularly scheduled information seminars to learn more about the programs and the credential admission requirements. Students who decide as undergraduates to become teachers may, with careful program planning, earn more than one credential in a fifth-year student teaching program. In addition, students should check with their undergraduate advisors regarding the availability of a subject-matter preparation program. Students who do not meet subject-matter proficiency through their undergraduate major must pass subject-matter exams in either multiple subjects (the Multiple Subject Assessment for Teachers) or a single subject (PRAXIS test in specific subject and the Single Subject Assessment for Teaching (SSAT)).

The Multiple Subjects Credential authorizes the teaching of grades K-12 in multiple subject settings but is primarily used to authorize teaching K-6 classes. Students may earn the Multiple Subjects Credential without the Cross-cultural Language Academic Development (CLAD) Emphasis or may choose the Bilingual-cultural Language Academic Development (BCLAD) Emphasis in Spanish. The CLAD provides additional training to help prospective teachers work in culturally and linguistically diverse classrooms. The BCLAD Emphasis in Spanish is offered for Spanish-speaking CLAD candidates and requires that teachers deliver instruction in Spanish.

The Single Subject Credential authorizes the teaching of a subject area in a middle or secondary school (grades 7 through 12). Students may earn the Single Subject credential with or without the CLAD emphasis. Students who do not meet subject-matter proficiency through the undergraduate major must pass the PRAXIS Subject Assessment Test in the area in which they plan to teach and the Single Subject Assessment for Teachers (SSAT).

The Education Specialist Credential in Mild/Moderate Disabilities authorizes the teaching of individuals with specific learning disabilities, mental retardation, serious emotional disturbances, and other health impairments.

The Education Specialist Credential in Moderate/Severe Disabilities authorizes the teaching of individuals with autism, mental retardation, both deafness and blindness, serious emotional disturbances, and multiple disabilities.

Students are no longer required to earn a basic multiple subject or single subject credential first but may enter a specialist credential program directly. Both education specialist credentials are two-level credentials, meaning that after the Level I Preliminary Credential is earned, the student has five years to complete a Level II Professional Credential. The second level is completed while the candidate is teaching in a special education setting. The specialist credentials offer the opportunity to integrate some of the credential work with a master’s program; the master’s is normally completed the following year. Eligibility in the integrated master’s program is determined by undergraduate grade point average based on the last 90 quarter units. Graduate Record Exam scores, and an interview.

Internships are available in all of the above-mentioned credential programs for candidates with adequate teaching experience. However, the dual credential program in which students earn a special education credential and either single subject or multiple subject credential is available only through a student teaching program.

For more information regarding UCR teaching credential programs call (909) 787-5225. To obtain a list of dates for the credential information seminars, check the Web site at [http://www.education.ucr.edu](http://www.education.ucr.edu) and pick up a 3-Step Book from the rack outside the Teacher Education Office, 1215 Sprout. The seminars are free, and no reservations are needed.
Program for the Preparation of Administrators

Advanced programs for the Preliminary and Professional Administrative Services Credentials are also offered.

Students who have received, or are working toward, advanced degrees in educational administration are eligible to pursue a program of study leading to the Administrative Services Credentials.

UCR is approved by the Commission on Teacher Credentialing to recommend candidates for both the Preliminary and Professional level Administrative Services Credentials.

UPPER-DIVISION COURSES

EDUC 100A. Tutorial Teaching: Community Outreach. (2)
Lecture, five hours per quarter; field, three hours per week; outside research, fifteen hours per quarter. Prerequisite(s): upper-division standing. Motivation and teaching of children and adolescents in a tutorial setting in a school or other appropriate community educational center. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

EDUC 100B. Tutorial Teaching: Professional Development. (2)
Lecture, five hours per quarter; field, three hours per week; outside research, fifteen hours per quarter. Prerequisite(s): upper-division standing: consent of instructor. Guided and sequenced tutorial experiences with children and adolescents enrolled in local schools having cooperative arrangements with the University. Provides experience in one-on-one teaching and supports the professional development of students planning to teach. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

EDUC 101. Academic Disciplines and Professional Education. (1)
Lecture, one hour. Prerequisite(s): EDUC 100A or EDUC 100B or EDUC 172 or EDUC 174; upper-division standing. Introductory study of how academic disciplines relate to pedagogy, including developing a personal educational philosophy, discovering ways to communicate knowledge, and reflecting on how a scholar becomes a teacher. Designed for undergraduates contemplating education as a professional career. Graded Satisfactory (S) or No Credit (NC).

EDUC 106. Practicum in Child Development. (4)
Lecture, three hours; practicum, three hours. Prerequisite(s): upper-division standing: consent of instructor is required for students repeating the course. Introduction to sociocultural perspectives of child development. Topics include sociocultural theories of development, motivational aspects of learning, technology in education, and school-home linkages. Application of child development theories and research related to them takes place during fieldwork assignments in an after-school, computer-based program for elementary school students. Course is repeatable. Cross-listed with HMDV 106 and PSYC 106.

EDUC 109. Multicultural Education in the American School. (4)
Lecture, three hours; outside research, two hours; field, one hour. Prerequisite(s): ANTH 001 or ANTH 001H or SOC 003 or equivalent; ANTH 104 or ANTH 122 or SOC 133 or SOC 135 or equivalent; EDUC 100A or EDUC 100B or equivalent. An analysis of the classroom as a microcosm of society. Focuses on problems that arise from the school's attempt to acculturate diverse ethnic groups and surveys the demographic changes of California with consequences for the multicultural classroom. Includes observation and participation in assigned schools.

EDUC 110. Learning and Instruction. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. The study of stages of intellectual development, principles of learning, the dynamics of human behavior, and cultural differences as they relate to modern curricula and instruction.

EDUC 114. Comparative International Education. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Identification, analysis, and comparison of the educational characteristics of selected developed and developing nations such as Japan, England, Mexico, and Egypt. Hanson, Harley.

EDUC 116. The Exceptional Child. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing. Characteristics of individuals with physical and mental disabilities, emotional disturbance, visual impairments, deaf, or gifted. Emphasizes educational programs and considers the effects of gender, socioeconomic, ethnic, and linguistic factors. Cross-listed with HMDV 116.

EDUC 117. Mental Retardation. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing. The organic and cultural basis of mental retardation. Physical, psychological, emotional, and social development of persons with mental retardation. Covers mild and severe forms of mental retardation. Does not meet requirements for the Special Education Teaching Credential. Cross-listed with HMDV 117.

EDUC 120. Guidance in Special Education. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): EDUC 116/HMDV 116 or consent of instructor. Application of principles and techniques of counseling children with disabilities and their families or guardians. Emphasizes the role of the teacher in educational, personal, and vocational (transition) guidance for exceptional children. Includes materials for working with families from diverse cultural and linguistics backgrounds. Cross-listed with HMDV 120.

EDUC 129. Educational Assessment of Individuals with Disabilities. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 116/HMDV 116 or consent of instructor. Principles and techniques of assessment and educational planning for children with disabilities. Includes examination of a broad range of assessment tools for general and special education. Cross-listed with HMDV 129.

EDUC 130. Mild and Moderate Disabilities. (4)
Lecture, three hours; written outside work, three hours. Prerequisite(s): EDUC 116/HMDV 116 or consent of instructor. Explores characteristics, etiology, and identification of individuals with mild and moderate disabilities, history and laws influencing their treatment and education, and current education and transition issues. Includes mild and moderate retardation, learning disabilities, and emotional and behavioral disorders. Cross-listed with HMDV 130.

EDUC 131. Moderate and Severe Disabilities. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): EDUC 116/HMDV 116 or consent of instructor. Explores characteristics, etiology, and identification of individuals with moderate and severe disabilities, history and laws influencing their treatment and education, and current education and transition issues. Includes mental retardation, serious emotional disturbance, and autism. Cross-listed with HMDV 131.

EDUC 139. Curriculum and Instruction. (4)
Lecture, three hours; laboratory, two hours. Prerequisite(s): EDUC 110 (or concurrent). The study of modern curricula in the elementary and secondary schools, including the effects of performance objectives, diagnostic-prescriptive teaching, individualized instruction, lesson planning, and performance assessment. Content analysis of curriculum areas will be emphasized.

EDUC 140. Educational Research: Descriptive Statistics. (4)
Lecture, three hours; laboratory, variable hours. Statistical notation, tabulating and graphing data, measures of central tendency and variability, normal curve, simple correlations, introduction to inferential process, t-test for means. Illustrated applications in education included.

EDUC 141. Mathematics Education. (4)
Lecture, three hours; individual study three hours. Prerequisite(s): consent of instructor. An examination of contemporary instructional strategies relating to mathematics education. Includes an examination of thinking skills and problem solving strategies applicable to number theory, logic patterns and functions, statistics and probability, geometry and algebra.

EDUC 142. Development of Scientific Reasoning in Young Children. (4)
Lecture, three hours; individual study two hours; field, one hour. Prerequisite(s): upper-division standing. Examines how to effectively teach science to elementary school children. Critically analyzes what it means to think scientifically, the nature of children’s scientific reasoning, different visions of appropriate goals for children’s science education, and current science curricula.

EDUC 146. Educational Perspectives on the Chicano. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): consent of instructor. An examination of educational policy issues concerning Chicano students, such as testing and testing procedures, learning styles, socialization, and language acquisition. Other topics will deal with the impact of significant legislative acts related to the education of Chicanos. Cross-listed with ETST 146.

EDUC 150. Teacher Education Lecture Series. (1)
Lecture, ten hours per quarter. Prerequisite(s): upper-division standing. Presentations, demonstrations and discussions on timely topics in public school teaching. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 9 units.

EDUC 172. Reading and Language Development. (5)
Lecture, three hours; outside research, three hours; field, three hours. Prerequisite(s): EDUC 100A or EDUC 100B or equivalent upper-division standing or consent of instructor. An introduction to reading and language development: theoretical models of reading, linguistics and language development; methods and materials; children’s...
EDUC 173. Teaching Literature to Children and Adolescents. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing. Explores developmental methods appropriate for teaching literature to children and adolescents. Topics include story telling, story reading, picturization, dramatization and body movement, and narrative, poetic, and dramatic writing. Examines literature written for children and adolescents and adult fiction appropriate for children and adolescents.

EDUC 174. Reading and Writing in the Content Areas. (5)

Lecture, three hours; outside research, three hours; field, three hours. Prerequisite(s): EDUC 100A or EDUC 100B or equivalent; upper-division standing or consent of instructor. An examination of reading, writing, and study skills needed by elementary and secondary students in all content areas of the curriculum. Includes observation and participation in assigned schools. Donlan, Knudson

EDUC 175. Problems in Teaching Reading. (4)

Lecture, one hour; field, nine hours. Prerequisite(s): EDUC 172, EDUC 173, EDUC 174 (EDUC 173 or EDUC 174 may be taken concurrently). Supervised field work on problems in teaching reading and writing in various settings, such as in the classroom and in research laboratories. Requires analysis, planning, execution and evaluation of programs and strategies for solving reading problems. Students are required to reserve nine hours each week for participation in assigned school.

EDUC 177A. Language Development in Content Areas. (4)

Lecture, three hours; outside research, two hours; field, one hour. Prerequisite(s): EDUC 172 or EDUC 174 or equivalent; LING 100 or LING 102 or equivalent; ANTH 120 or LING 111 or equivalent. Study of second language acquisition and models of teaching strategies for English language development in content area instruction. Includes observation and participation in assigned schools. Satisfactory (S) or No Credit (NC) grading is not available.

EDUC 177B. Language Development in Content Areas. (3)

Lecture, two hours; field, two hours; outside research, one hour. Prerequisite(s): EDUC 177A. Analysis, planning, execution, and evaluation of empirical and theoretical foundations of programs and strategies for English-as-a-second-language instruction and English language development in content area instruction. Includes observation and participation in assigned schools. Satisfactory (S) or No Credit (NC) grading is not available.

EDUC 190. Special Studies. (1-5)

Outside research, three to fifteen hours. Prerequisite(s): upper-division standing; consent of the Dean of the Graduate School of Education. Independent study and research in education. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

EDUC 191 (E-Z). Subject Matter Curriculum Theory and Instructional Processes. (3)

Seminar, three hours; laboratory, three hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 174; concurrent enrollment in EDUC 376B. An introductory study of instructional curriculum theory processes as they relate to the single subject classroom. E. Social Science; I. English; M. Mathematics; S. Science.

EDUC 200. Human Differences. (4)

Lecture, three hours; research, three hours. Prerequisite(s): EDUC 140 and EDUC 212 or equivalent. Dimensions of individual differences, varieties of group differences, and factors producing differences in development.

EDUC 201A. Theories and Processes of Reading. (4)

Lecture, three hours; laboratory, three hours. Prerequisite(s): consent of instructor. Critical evaluation of linguistic, perceptual, cognitive, and affective components involved in reading. Examination of models that attempt to integrate the variables which influence perception, recognition, comprehension, and utilization of printed stimuli.

EDUC 201B. Discourse Analysis in Texts. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 210A or consent of instructor. Examination of theories of text analysis and their application to literacy instruction. Topics include schema theory and background knowledge, readability and comprehensibility, modes and purposes of discourse, and text structure analysis. Preparation for designing and conducting research projects involving literacy and reading.

EDUC 201C. Literacy and Language Development. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 210A, EDUC 210B, or consent of instructor. Examination of literacy development in individuals and in society; definitions of literacy; development of structural knowledge; development of communication skills; rule of language differences on the problems of learning to read and write; oral language arts; emergent literacy, and writing development.

EDUC 202. Theories of Education. (4)

Lecture, three hours. Prerequisite(s): consent of instructor. An analysis of the principle of contemporary theories affecting the development of educational policy.

EDUC 203. History of American Education. (4)

Lecture, three hours. Prerequisite(s): consent of instructor. A study of American educational history from 1830 to the present.

EDUC 204. The School as a Social System. (4)

Lecture, three hours. A study of intra-school relationships; administration, professional bureaucracy, faculty and student relations. The classroom itself will be examined as a social-psychological system.

EDUC 205. School-Community Relations. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Examines the structures of communication that help shape the relationships between schools and their communities. Emphasis given to an analysis of communication processes and techniques to improve community support, parent participation, and private sector partnerships.

EDUC 206A-EDUC 206B. Politics of Education. (4-4)

Lecture, three hours. Examination of political power, representation, influence, decision-making and inter-governmental relations in the public schools. 206A focuses on local school district politics, 206B on state and federal politics.

EDUC 207. Educational Policy. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Examines twentieth-century American educational policy covering major issues underlying school reform and the social, political, and economic forces that shape these issues. Also examines state and local strategies to enhance school performance.

EDUC 208. Legislative Action and Educational Policy. (4)

Lecture, four hours. Examination of the legal processes governing educational policy, including significant laws, legal principles, recent litigation, controlling relationships of schools to student and teacher rights and duties, administrative behavior, etc. Focuses on connections between legislative and judicial action and the social, political and economic forces affecting education.

EDUC 209A-EDUC 209B. Education Policy Analysis. (4-4)

Lecture, three hours. Prerequisite(s): consent of instructor. Theoretical and methodological foundations for education policy analysis. 209A focuses on theory building—utilizing frameworks from political science, sociology, social psychology and history. 209B: examines conceptualization of variables and the formulation and testing of hypotheses regarding policy formation and effects.

EDUC 210. Theories of Development. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. A critical consideration of human development in the context of current research and theoretical models with implications for education in the public school setting.

EDUC 211A. Cognitive Development. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Survey course on children’s cognitive development, with an emphasis on Piagetian theory and research done in an information-processing framework. Special attention will be paid to the applicability of theory and research learning and teaching of school subjects.

EDUC 211B. Social and Affective Development. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Survey course on social, affective, and personality development during childhood and adolescence. Topics include individuality and self, peer relations, adult-child relations, self-system beliefs and attitudes, and achievement motivation. Special attention will be paid to issues as they relate to socialization at schools.

EDUC 212. Research Methods. (4)

Lecture, three hours; consultation, one hour. Prerequisite(s): EDUC 140 or consent of instructor. Principles of scientific research, orientation to the different methods including historical, survey, descriptive, correlational, experimental, quasi-experimental, internal and external threats to validity.

EDUC 213. Factor Analysis for Test Construction. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 242 or consent of instructor. Statistical methods of factor analysis applied to the development of educational tests. Methods of extracting factors from test items and subscores concerned with educational measurement. Orthogonal and oblique methods of rotation emphasized. Reliability and validity in the context of factor analysis discussed.
EDUC 214. Educational Research: Statistical Inference and Hypothesis Testing. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): EDUC 140. Sampling distributions of Z, X², F, t, use of Z, X², F in selected tests of significance, one-way fixed effects ANOVA, planned multiple comparisons, 2-way ANOVA, fixed, random, mixed effects model, and multiple regression. Illustrated applications in education included.

EDUC 215. Educational Research: Experimental Design. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): EDUC 140, EDUC 212, EDUC 214. Focus on common designs used in education including higher order factorials, hierarchical designs, repeated measures. Emphasis on design application and appropriate statistical analysis for education: ANOVA, MANOVA.

EDUC 216. Educational Research: Advanced Statistics. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): EDUC 212, EDUC 214, EDUC 215. Study of advanced statistical procedures frequently used in educational research. Topics vary: MANOVA, simplex and multiple regression, discriminant function analysis, factor analysis.

EDUC 217. Single-Case Experimental Design. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education; or consent of instructor. Logic, applications, and analytic techniques for single-case experimental designs in naturalistic settings. Specific designs include withdrawal, multiple baseline, alternating treatments, changing criterion, and multilevel experimental designs. Emphasizes problems of using and changing single-case experimental designs in applied settings.

EDUC 218. Problems in Evaluation. (4) Lecture, three hours. Prerequisite(s): EDUC 230A. A study of policies and procedures which define program evaluations in education including evaluation models, formative and summative strategies, evaluation designs and analyses, and ethical issues.

EDUC 219. Classroom and School Assessment. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 140 or consent of instructor. Survey course in classroom and school assessment. Basic principles of measurement including test administration, construction, scaling, norming, reliability, validity, and interpretation of individual and group tests.

EDUC 220. Qualitative Research Methods in Education. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): consent of instructor. An analysis of conceptual frameworks and methodological issues in qualitative studies of school processes. Topics include sociocultural knowledge, generalizability, reflexivity, and interpretation.

EDUC 221. Computer Applications in Schools. (4) Lecture, three hours; laboratory, three hours. Introduction to recent computer hardware and software developments available for use in schools, with emphasis on administrative planning and policy making required for effective utilization. Topics include administrative data base management, computer assisted and managed instruction, and computer literacy.

EDUC 222. Role Formation in Educational Organizations. (4) Lecture, three hours. Prerequisite(s): consent of instructor. An analysis of adult roles and their formation in schools, e.g., teacher, counselor, principal and central office administrators. Emphasis will center on the individual's early socialization to the school's professional work and related professional ideologies.

EDUC 223A-EDUC 223B. Field Study Methods for Educational Organizations. (4-4) Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 223A for EDUC 223B. Field study methods in education. 223A: Field study skill development including participant observation, field relations, data collection and analysis, and generation of hypotheses. 223B: Field Study research applications including literature reviews and analysis techniques. Hanson, Ortiz.

EDUC 224. Organization and Administration of the School. (4) Lecture, three hours. The study of school systems and administrative structures in the light of organizational and administrative theory.

EDUC 225. School Finance. (4) Lecture, three hours; consultation, one hour. Prerequisite(s): consent of instructor. Explores methods of financing public education. Identifies budgeting and accounting techniques used by school districts in support of the instructional process and considers legal requirements and public reactions to the financing of education.

EDUC 226. Dimensions of Exceptionality. (4) Lecture, three hours; research, three hours. Prerequisite(s): EDUC 116/HUMD 116 or equivalent. An examination of exceptionality with particular emphasis on characteristics (general and specific developmental disabilities such as mental retardation and hyperactivity) and manifestations (in home, school, or alternative living environments). Focuses on identifying and intervening with children who have disabilities.

EDUC 227. Educational Change and Innovation. (4) Lecture, three hours. Prerequisite(s): EDUC 224 or MG 201/STAT 232 or consent of instructor. The study of change and innovation in the public school. Emphasis is placed on (a) the organizational environment of the school which must accommodate the innovation, (b) specific strategies of change, and (c) contemporary educational innovations.

EDUC 228. Human Resources Administration in Education. (4) Lecture, three hours; consultation, one hour. Prerequisite(s): consent of instructor. Examines theory, research, and practices associated with the human resources function in schools. Topics include goals, policies, and outcomes related to planning, recruitment, selection, appraisal, compensation, development, collective bargaining, and the use of management information systems as tools for informed decision making.

EDUC 229. Leadership in School Organizations. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing. Examines theories of leadership in school organizations. Emphasis given to rational and institutional perspectives and their implications for management in educational settings.

EDUC 230A-EDUC 230B-EDUC 230C. Curriculum and Instruction. (4-4-4) Lecture, three hours. Prerequisite(s): EDUC 230A recommended for EDUC 230B; either EDUC 230A or EDUC 230B required for EDUC 230C. 230A: covers analysis of curriculum theories, trends, innovations, and instructional strategies; 230B: covers analysis of curriculum organization, design, and implementation; 230C: covers theory and technology associated with the development and production of instructional programs for the classroom.

EDUC 231. Special Problems in Curriculum. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 139 or equivalent. Special problems in the curriculum area as follows: E. Curriculum Inquiry; G. Excellence in Teaching; M. Multicultural Programs in Reading and Language Arts; Q. Questioning and Teaching.

EDUC 232. Teaching Strategies. (4) Lecture, three hours. Prerequisite(s): teaching credential, teaching experience. Development of varied instructional strategies and skills, such as inquiry and questioning, that are compatible with new and evolving curricula. Emphasis will be on classroom applications.

EDUC 233. School Learning Environment. (4) Lecture, three hours. Prerequisite(s): admission to a graduate degree program, teaching credential and teaching experience. The course will consider (1) the dimensions and characteristics of the school learning environment; (2) the role of teaching models, strategies, programs, policies and interpersonal relationships in establishing the school learning environment; and (3) the impact of the learning environment on student motivation, attitude formation, and achievement.

EDUC 234. Curriculum Differentiation. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): consent of instructor. A theoretical and methodological analysis of curriculum differentiation. Describes and critically analyzes the processes and effects of providing different curricula for diverse student groups in schools.

EDUC 235. Classroom Processes. (4) Lecture, three hours; consultation, one hour. Analysis and synthesis of theoretical and empirical studies of selected classroom processes, including question-answer exchanges and discussions.

EDUC 236. School and Society. (4) Lecture, two hours; outside research, three hours. Prerequisite(s): first-year standing in the Ph.D. program in Education. Introduces theories and research on societal, institutional, and organizational influences on schooling. Locates the work of educational professionals in the contexts of the school and the state.

EDUC 237. Research on Teaching. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 212 or consent of instructor. Examines approaches guiding research on teaching, such as process-product, classroom ecology, ethnography, and teacher cognition.

EDUC 238. Cognition and Instruction in Mathematics. (4) Lecture, three hours; practicum, three hours. Prerequisite(s): EDUC 141 or EDUC 232 or EDUC 240 or consent of instructor. An examination of research concerning cognition and instruction in mathematics. Topics include questions regarding the definition of mathematics, goals of mathematics instruction, the nature of children's
thinking about various mathematical concepts, and selected instructional approaches.

EDUC 239. Cognition and Instruction in Science. (4)
Lecture, three hours; practicum, three hours. Prerequisite(s): EDUC 232 or EDUC 240 or consent of instructor. An examination of research concerning cognition and instruction in science. Topics include questions regarding the definition of science, goals of science instruction, the nature of children's thinking about various scientific concepts, and selected instructional approaches.

EDUC 240. Educational Psychology. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 110 or equivalent or consent of instructor. Overview of the major empirical and theoretical bases of educational psychology. Followed by detailed analysis of the following topics: (a) cognition and metacognition as applied to school learning and instruction, (b) motivation, student perceptions, teacher perceptions, classroom processes, (c) effective teaching, and (d) evaluation.

EDUC 241A. Inquiry and Research Methods. (3)
Lecture, two hours; outside research, three hours. Prerequisite(s): first-year standing in the Ph.D. program in Education. Examines the nature of inquiry and research in educational studies, including the formation of questions and qualitative research methods. Provides training in the collection, analysis, and interpretation of qualitative data. Required of first-year Graduate School of Education doctoral students. Graded In Progress (IP) until EDUC 241A, EDUC 241B, and EDUC 241C are completed, at which time a final grade is assigned.

EDUC 241B. Inquiry and Research Methods. (3)
Lecture, two hours; outside research, three hours. Prerequisite(s): EDUC 241A first-year standing in the Ph.D. program in Education. Examines the nature of inquiry and research in educational studies, including the formation of questions and qualitative and quantitative research methods. Focuses on analysis of qualitative data and introduces quantitative methods. Students conduct small-scale empirical studies. Required of first-year Graduate School of Education doctoral students. Graded In Progress (IP) until EDUC 241A, EDUC 241B, and EDUC 241C are completed, at which time a final grade is assigned.

EDUC 241C. Inquiry and Research Methods. (3)
Lecture, two hours; outside research, three hours. Prerequisite(s): EDUC 241A, EDUC 241B, first-year standing in the Ph.D. program, in Education. Examines the nature of inquiry and research in educational studies, including the formation of questions and basic research methods. Focuses on analysis of quantitative data and comparisons of qualitative and quantitative methods. Students conduct small-scale empirical studies. Required of first-year Graduate School of Education doctoral students.

EDUC 242. Advanced Test Theory. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 214A, EDUC 214B, or consent of instructor. Examines principles of classical and modern test theory including classical testing, generalizability theory and item response theory. Emphasis on statistical bases of these theories.

EDUC 243. Instruction for Problem Solving and Understanding. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 232 or consent of instructor. Analyzes theories of problem solving and understanding. Examines teaching from a problem-solving and understanding perspective.

EDUC 244. The Student. (3)
Lecture, two hours; outside research, three hours. Prerequisite(s): first-year standing in the Ph.D. program in Education. Focuses on the student population of today's schools through an analytical review of literature on human development, exceptionality, educational psychology and policy. Students write an in-depth literature review and compose essays on critical research topics.

EDUC 245 (E-Z). Review of Research Literature in Education. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Critical analyses of research in the various areas of education. Course may be repeated with separate letter designation.

EDUC 246 (E-Z). Research on Education of Exceptional Children. (4)

EDUC 248 (E-Z). Psychoeducational Assessment. (4)
Lecture, three hours. Prerequisite(s): consent of instructor: E. Cognitive Functions: F. Personality Assessment: G. Case Study Methods.

EDUC 250. Seminar in Education. (1)
Seminar, one hour. Prerequisite(s): graduate standing or consent of instructor. A series of presentations by guests, faculty, and advanced graduate students on selected topics in education. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

EDUC 251. Seminar in Cognitive Development. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): for EDUC 252N or EDUC 211A consent of instructor. Seminar on current issues in cognitive development. Topics include metacognition, Vygotskian theory, and cultural factors in cognitive development. Special attention will be paid to issues as they relate to the learning and teaching of school subjects.

EDUC 252 (E-Z). Seminar in Educational Psychology. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): consent of instructor. Reviews various topics in educational psychology at the theoretical and empirical levels. E. History of Educational Psychology: G. Advances in Mental Measurement: N. Children’s Mathematical Cognition. 

EDUC 253. Administrative Judgement in Education. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): doctoral standing or consent of instructor. Examination of the process by which educational administrators make judgments. Emphasis is given to the inferential errors that humans make by employing intuitive strategies and overlooking evidence.

EDUC 254A. School Psychological Assessment I. (4)
Seminar, three hours; practicum, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education; or consent of instructor. Administration, scoring, and interpretation of individual measures of intelligence and academic aptitude. Emphasizes use of these measures for screening and classification decisions and psychological report writing.

EDUC 254B. School Psychological Assessment II. (4)
Seminar, three hours; practicum, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education; or consent of instructor. Administration, scoring, and interpretation of individual norm-referenced measures of academic achievement, perceptual-motor skills, and adaptive behavior. Emphasizes use of these instruments for screening and classification decisions and psychological report writing.

EDUC 254C. Behavioral Assessment. (4)
Seminar, three hours; practicum, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education; or consent of instructor. Procedures and techniques of behavioral assessment including systematic behavioral observations, curriculum-based assessment, behavior rating scales, behavioral interviews, and self-monitoring. Topics include conceptual issues in applying traditional psychometric theories to behavioral assessment data and methods for integrating multimodal behavioral assessment information.

EDUC 254D. Nonbiased Assessment. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education; or consent of instructor. Methods and procedures for the scientific study of test bias. Different definitions of test bias and specific data analysis methods for detecting bias are discussed. Court cases and legal arguments for and against test bias are presented with emphasis on ethnic and cultural minorities.

EDUC 255A. Principles of Social Behavior Intervention. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education; or consent of instructor. Principles and procedures for prevention and remediation of academic learning problems and performance. Topics include functional analysis, stimulus control, generalization, and methods for summarizing trends in academic performance.

EDUC 255B. Principles of Academic Behavior Intervention. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education; or consent of instructor. Principles and procedures for prevention and remediation of academic learning problems and performance. Topics include functional analysis, stimulus control, generalization, and methods for summarizing trends in academic performance.
EDUC 256. Advanced Seminar on Learning Disabilities. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): EDUC 140, EDUC 212 or equivalent; or consent of instructor. Critical evaluation of theory and research in the field of learning disabilities. Data-based project reflecting original research required.

EDUC 258A-EDUC 258B-EDUC 258C. Seminar in Educational Research. (4-4-4)
Seminar, three hours; consultation, one hour. Prerequisite(s): master’s degree, including EDUC 230B and EDUC 215 or EDUC 216 or equivalent. Doctoral seminars in curriculum: EDUC 258A: construction of a theoretical framework for curriculum development; EDUC 258B: a synthesis of theoretical and empirical research findings in an aspect of the curriculum; EDUC 258C: the designing, executing, and reporting of the results of an empirical research study.

EDUC 259. Research Seminar. (2)
Seminar, two hours. Prerequisite(s): EDUC 140, EDUC 212, EDUC 214 or consent of instructor. Research reports on topics in educational psychology, special education, curriculum and instruction, and educational administration. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

EDUC 260. History of Curriculum Development. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): consent of instructor. A historical study of textbooks and other curriculum materials which have been developed in response to intellectual, social, political, and economic forces in the United States from 1789 to the present.

EDUC 261A. School Psychological Consultation. (4)
Seminar, three hours; practicum, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education; or consent of instructor. Theoretical and applied issues of consultative problem solving conducted in school settings. Principles derived from behavioral systems and organizational theories and how these principles are used in an indirect service-delivery model to facilitate changes in students’ behavior.

EDUC 261B. Advanced Topics in School Psychological Consultation. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education; or consent of instructor. Analysis and discussion of current research in school-based consultation. Emphasis on research strategies to answer difficult consultation questions. Oral presentations of student-designed research proposals required. Topics vary.

EDUC 262. Achievement Motivation. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): EDUC 110 or equivalent or consent of instructor. This seminar covers the major approaches to achievement motivation with an emphasis on the cognitive approach. Topics include development and individual differences in achievement motivation, achievement-related attitudes and beliefs (e.g., self-concept, attributions, perceived control), relations between motivation and school performance.

EDUC 263. Seminar in School Organization and Management. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): doctoral standing or consent of instructor. Examines critical issues and processes associated with organizational management at the national, state, and local levels. Emphasis given to concerns involving educational decision making, socialization, and human resources management.

EDUC 264. Professional School Psychology. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education; or consent of instructor. Roles and functions of psychologists working in school settings with particular emphasis upon ethical standards for psychologists. Historical and legal evolution of school psychology is discussed along with issues in professional identity as school psychologists.

EDUC 265. Practicum in School Psychology. (1)
Seminar, one hour; practicum, eight hours. Prerequisite(s): admission to Ph.D. program in School Psychology. Closely supervised experience in schools in which students perform psychoeducational assessments, consult with teachers and parents, and function as members of multidisciplinary teams. Cases include students with specific learning disabilities, behavior disorders, mental retardation, and other disabilities. Seminar provides didactic component to support student’s practicum experience. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

EDUC 266. School Facility Project Management. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. A study of school district project management focusing on the processes of school construction. These processes include planning and designing educational facilities.

EDUC 267. Culture of School Organizations. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): doctoral standing or consent of instructor. Advanced inquiry in the organization of schools. Designed for doctoral students in educational policy and administration, the course examines the impact of internal and external cultural forces on the structure and operation of school organizations.

EDUC 268. Diversity in Educational Administration. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Provides an understanding of school administrative and management issues related to the increasing diversity in schools. Theories about underrepresentation, diversity, legislation, harassment, and institutional participation reviewed. Cultural background, communication patterns, social networks, leadership, and administrative styles are considered.

EDUC 269. Education and Treatment of Students with Special Medical, Genetic, and Physiological Needs. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): admission to Ph.D. program in School Psychology or Special Education or consent of instructor. This seminar covers the major approaches to achieving treatment of students with special medical, genetic, and physiological needs. Topics include development and individual differences in achievement motivation, achievement-related attitudes and beliefs (e.g., self-concept, attributions, perceived control), relations between motivation and school performance.

EDUC 270. The Dynamic Assessment of Mental Abilities. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): EDUC 140, EDUC 212, EDUC 213, EDUC 240, or their equivalents. The variety of approaches that fall under the dynamic assessment rubric will be specified and critically examined. Special emphasis will be given to their theoretical bases and implications as well as to their practical utility.

EDUC 271. The School Principal: Tools for Managerial Problems. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): consent of instructor. Review of the literature on the principal’s role as leader and manager of the school site. Topics include practices and problems of the school principal, interpersonal relations, political issues, communication techniques, and technology.

EDUC 272. Superintendent-School Board Relations. (4)
Seminar, three hours. A review of the literature, resources, history and current practice and problems of superintendents and school boards at the district level. Emphasis will include management and communication techniques in the promotion of effective working relationships.

EDUC 273. Urban Educational Policy and Politics. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Examines issues confronting urban public schools and conditions influencing these institutions. Focuses on reforms advancing and undermining the urban school in America. Analyzes how schools influence and respond to urban and metropolitan environments.

EDUC 274. Text Analysis. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Analysis of written texts to study social and cognitive aspects of literacy. Topics include the writer-reader relationship, social construction of genre, text readability, teaching and learning, and textual indicators of student development.

EDUC 275. Teaching and Learning. (3)
Seminar, two hours; outside research, three hours. Prerequisite(s): first-year standing in the Ph.D. program in Education. Explores issues and questions in teaching, learning, and child development. Addresses implications of various teaching and learning theories for curriculum, instruction, assessment, and teacher education.

EDUC 290. Directed Studies. (1-6)
Prerequisite(s): graduate status and consent of instructor. Research and special studies in education. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

EDUC 291. Individual Studies in Coordinated Areas. (1-6)
Consultation, one to six hours. Prerequisite(s): graduate standing. A program of studies designated to assist students who are preparing for graduate degree examinations. Does not meet unit requirements for M.A. degree. Graded Satisfactory (S) or No Credit (NC). Repeatable up to 18 units prior to successful completion of Ph.D. qualifying examinations.

EDUC 297. Directed Research. (1-6)
Research, three to eighteen hours. Prerequisite(s): advanced graduate standing and consent of instructor. Directed research on selected problems in education. Graded Satisfactory (S) or No Credit (NC).

EDUC 298-I. Internship in School Psychology. (4)
Internship, thirty-five hours. Prerequisite(s): admission to Ph.D. program in School Psychology. Supervised internship to be repeated for four consecutive quarters for a total of not less than 1,300 hours, half of which must be...
in a school setting. Credit for internship will not be granted to students with less than 72 quarter hours of successfully completed graduate-level course work. Two hours per week is devoted to direct, face-to-face supervision of each intern. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

EDUC 299. Research for Thesis or Dissertation. (1-12)
Directed independent studies, one to six hours. Prerequisite(s): advancement to candidacy for the master's or doctoral degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PROFESSIONAL COURSES

EDUC 302. College Teaching Practicum. (1-6)
Practicum, three to eighteen hours. Prerequisite(s): advanced Ph.D. standing and consent of instructor. A minimum of one quarter supervised teaching in college level classes under the supervision of the course instructor. Required of all doctoral candidates in the Graduate School of Education. Fulfills teaching portion of Ph.D. requirements. Graded Satisfactory (S) or No Credit (NC). May be taken for a maximum of three quarters.

EDUC 303A. Level II Induction: Mild/Moderate Specialist. (4)
Lecture, two hours; field, six hours. Prerequisite(s): a Level I Education Specialist Credential: Mild/Moderate Disabilities. Covers topics related to teaching of Mild/Moderate special education students. Includes development of an induction plan, defining the role of the school district mentor, development and maintenance of a professional portfolio, construction of Individualized Education Programs (IEP), Individualized Transition Programs (ITP), case studies, and verification logs. Students develop effective collaboration skills to work productively with the University and school districts. Graded Satisfactory (S) or No Credit (NC).

EDUC 303B. Level II Summative Evaluation: Mild/Moderate Specialist. (4)
Lecture, one hour; field, three hours. Prerequisite(s): a Level I Education Specialist Credential: Mild/Moderate Disabilities. Covers topics related to teaching of Mild/Moderate special education students. Includes development of an induction plan, defining the role of the school district mentor, development and maintenance of a professional portfolio, construction of Individualized Education Programs (IEP), Individualized Transition Programs (ITP), case studies, and verification logs. Students develop effective collaboration skills to work productively with the University and school districts. Graded Satisfactory (S) or No Credit (NC).

EDUC 304B. Level II Summative Evaluation: Moderate/Severe Specialist. (2)
Lecture, one hour; field, three hours. Prerequisite(s): two years of teaching experience in the specialization area of the student's Level I Education Specialist Credential: Moderate/Severe Disabilities (may be completed concurrently). EDUC 304A. Students develop a five-year professional development plan, complete a comprehensive and professional portfolio based on their teaching experience in a class for individuals with moderate/severe disabilities, and undergo an evaluation process. Graded Satisfactory (S) or No Credit (NC).

EDUC 320A. Integrating Technology into Classroom Practice. (1)
Lecture, eight hours per quarter; laboratory, three hours per quarter; field, three hours per quarter. Prerequisite(s): EDUC 320A. Focuses on the application of computer technology to curriculum and instruction. Topics include Internet applications, non-computer technology, and use of technology to enhance problem solving skills. Includes field observations in schools. Graded Satisfactory (S) or No Credit (NC).

EDUC 320B. Integrating Technology into Classroom Practice. (1)
Lecture, eight hours per quarter; laboratory, three hours per quarter; field, three hours per quarter. Prerequisite(s): EDUC 320A. Focuses on the application of computer technology to curriculum and instruction. Topics include Internet applications, non-computer technology, and use of technology to enhance problem solving skills. Includes field observations in schools. Graded Satisfactory (S) or No Credit (NC).

EDUC 320C. Integrating Technology into Classroom Practice. (1)
Lecture, four hours per quarter; laboratory, fifteen hours per quarter; field, three hours per quarter. Prerequisite(s): EDUC 320A, EDUC 320B. Addresses issues related to the use of technology in schools. Using presentation software, the Internet, and other computer-based technology, students develop and teach a curriculum unit appropriate to their teaching subject area and/or grade level. Emphasis is on integrating the use of computer-based applications with instruction. Graded Satisfactory (S) or No Credit (NC).

EDUC 330. Instructional Processes for the Multiple Subjects Classroom. (5)
Lecture, five hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 172; concurrent enrollment in EDUC 336B or EDUC 338A. Study and application of instructional processes appropriate for use in the multiple subjects classroom. Topics include oral communication skills, curriculum planning, and instructional strategies. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 330 or EDUC 331.

EDUC 331. Bilingual/Cross-cultural Methods of Teaching. (5)
Lecture, five hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 172; concurrent enrollment in EDUC 336B or EDUC 338A. Study and application of instructional processes appropriate for use in the bilingual/cross-cultural classroom. Emphasis is on integrating English and Spanish into the program. Topics include material assessment, performance objectives, curriculum considerations, knowledgeable use of teacher aides, testing, and evaluation. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 330 or EDUC 331.
EDUC 338C. Intern Teaching in the Elementary School. (10)
Field, thirty hours. Prerequisite(s): EDUC 338A, EDUC 338B; admission to intern teaching program; concurrent enrollment in EDUC 352 or EDUC 353. Intern teaching in the multiple subjects classroom. Required for the Multiple Subjects Internship Credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 338C or EDUC 338E.

EDUC 340A-EDUC 340B. Instructional Procedures for the Handicapped. (5-5)
Lecture, three hours; laboratory, five hours. Prerequisite(s): admission to the Specialized Preparation Program. Development and learning needs of the handicapped: curriculum, procedures and materials. Includes participation in public school programs. EDUC 340A: Behavior disorders and mildly handicapped. EDUC 340B: Severely handicapped.

EDUC 345A. Supervised Student Teaching in a Special Class for Individuals with Mild/Moderate Disabilities. (12)
Field, thirty-six hours. Prerequisite(s): admission to a special education credential program; EDUC 340A (may be taken concurrently). Student teaching in a special education day class for individuals with mild/moderate disabilities. Required for the Education Specialist Instructional Credential in Mild/Moderate Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 345B. Supervised Student Teaching in a Special Class for Individuals with Moderate/Severe Disabilities. (12)
Field, thirty-six hours. Prerequisite(s): admission to a special education credential program; EDUC 340A (may be taken concurrently). Student teaching in a special education day class for individuals with moderate/severe disabilities. Required for the Education Specialist Instructional Credential in Moderate/Severe Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 346A. Supervised Intern Teaching in a Special Class for Individuals with Mild/Moderate Disabilities. (7)
Field, twenty-one hours. Prerequisite(s): admission to an internship program in mild/moderate disabilities; EDUC 340A (may be taken concurrently). Intern teaching in a special education day class for individuals with mild/moderate disabilities. Required for the Education Specialist Internship Credential in Mild/Moderate Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 346B. Supervised Intern Teaching in a Special Class for Individuals with Mild/Moderate Disabilities. (7)
Field, twenty-one hours. Prerequisite(s): admission to an internship program in mild/moderate disabilities; EDUC 340A (may be taken concurrently). Intern teaching in a special education day class for individuals with mild/moderate disabilities. Required for the Education Specialist Internship Credential in Mild/Moderate Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 347A. Supervised Intern Teaching in a Special Class for Individuals with Moderate/Severe Disabilities. (7)
Field, twenty-one hours. Prerequisite(s): admission to an internship program in moderate/severe disabilities; EDUC 347A. Intern teaching in a special education day class for individuals with moderate/severe disabilities. Required for the Education Specialist Internship Credential in Moderate/Severe Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 347B. Supervised Intern Teaching in a Special Class for Individuals with Moderate/Severe Disabilities. (7)
Field, twenty-one hours. Prerequisite(s): admission to an internship program in moderate/severe disabilities; EDUC 347B. Intern teaching in a special education day class for individuals with moderate/severe disabilities. Required for the Education Specialist Internship Credential in Moderate/Severe Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 347C. Supervised Intern Teaching in a Special Class for Individuals with Moderate/Severe Disabilities. (7)
Field, twenty-one hours. Prerequisite(s): admission to an internship program in moderate/severe disabilities; EDUC 347C. Intern teaching in a special education day class for individuals with moderate/severe disabilities. Required for the Education Specialist Internship Credential in Moderate/Severe Disabilities. Graded Satisfactory (S) or No Credit (NC).

EDUC 348A. Single Subject Intern Teaching Seminar. (2)
Seminar, two hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 174; concurrent enrollment in EDUC 378A. An applied analysis of instructional problems encountered by interns in the single subject classroom. Topics include basic curriculum, classroom management, interpersonal relationships, self-evaluation, and professional competencies. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 348A or EDUC 349A.

EDUC 348B. Single Subject Intern Teaching Seminar. (2)
Seminar, two hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 174, EDUC 348A; concurrent enrollment in EDUC 378B. An applied analysis of instructional problems encountered by interns in the single subject classroom. Topics include basic curriculum, classroom management, interpersonal relationships, self-evaluation, and professional competencies. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 348B or EDUC 349B.

EDUC 348C. Single Subject Intern Teaching Seminar. (2)
Seminar, two hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 174, EDUC 348B; concurrent enrollment in EDUC 378C. An applied analysis of instructional problems encountered by interns in the single subject classroom. Topics include basic curriculum, classroom management, interpersonal relationships, self-evaluation, and professional competencies. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 348C or EDUC 349C.

EDUC 349A-EDUC 349B-EDUC 349C. Single Subject Student Teaching Seminar. (2-2-2)
Seminar, two hours. Prerequisite(s): for EDUC 349A: concurrent enrollment in EDUC 376A; for EDUC 349B: concurrent enrollment in EDUC 376B; for EDUC 349C: concurrent enrollment in EDUC 376C or EDUC 345A or EDUC 345B. An analysis of applied problems in the process of instruction in the single subject classroom, including interpersonal relationships. Graded Satisfactory (S) or No Credit (NC).

EDUC 350. Multiple Subject Intern Teaching Seminar. (3)
Seminar, three hours. Prerequisite(s): concurrent enrollment in EDUC 336C or EDUC 345A or EDUC 345B. An analysis of applied problems in the process of instruction in the multiple subject classroom, including interpersonal relationships. Graded Satisfactory (S) or No Credit (NC).

EDUC 351. Seminar in Bilingual Student Teaching. (3)
Seminar, three hours. Prerequisite(s): must be taken concurrently with EDUC 336C or EDUC 345C. An analysis of applied problems in the bilingual classroom. Topics include basic curriculum, classroom management, interpersonal relationships, self-evaluation, and professional competencies as they apply to the bilingual classroom. Graded Satisfactory (S) or No Credit (NC).

EDUC 352. Multiple Subjects Intern Teaching Seminar. (3)
Seminar, three hours. Prerequisite(s): concurrent enrollment in EDUC 338C. An analysis of applied problems encountered by interns in the multiple subjects classroom. Includes discussion of interpersonal relationships. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 350, EDUC 351, EDUC 352, or EDUC 353.

EDUC 353. Seminar in Bilingual Intern Teaching. (3)
Seminar, three hours. Prerequisite(s): concurrent enrollment in EDUC 338C. An analysis of applied problems encountered by interns in the bilingual classroom. Topics include basic curriculum, classroom management, interpersonal relationships, self-evaluation, and professional competencies. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 350, EDUC 351, EDUC 352, or EDUC 353.

EDUC 354A. Orientation to Educational Administration and Policy. (2)
Seminar, fifteen hours per quarter; field, one and one-half hours per week. Prerequisite(s): admission to the Preliminary Administrative Services Credential program. Orientation to the field of educational administration and policy formation. Focuses on analysis, management skills, and mentoring.

EDUC 354B. Competence in Educational Administration and Policy. (2)
Seminar, fifteen hours per quarter; field, one and one-half hours per week. Prerequisite(s): EDUC 354A. Admission to the Preliminary Administrative Services Credential program. Evaluation of the students' skills in educational administration and policy formation. Students present professional growth portfolios demonstrating their competence in inquiry, reflection, and problem solving.

EDUC 355. Field Experience in School Administration. (4-8)
Lecture, three hours; field experience, three to fifteen hours. Prerequisite(s): consent of instructor. Supervised field experience. The planning, execution and evaluation
of administrative tasks under the supervision of local school administrators and university personnel. May be repeated for credit.

EDUC 365A. Advanced Study of Educational Administration and Policy Formation. (4)
Seminar, two hours; field, six hours. Prerequisite(s): admission to the Professional Administrative Services Credential program. Evaluation of the students' skills in educational administration and policy development. Students present professional growth portfolios demonstrating their competence in inquiry, reflection, and problem solving.

EDUC 365B. Advanced Study of Educational Administration and Policy Formation. (4)
Seminar, two hours; field, six hours. Prerequisite(s): EDUC 365A. Possession of California Preliminary Administrative Services Credential or equivalent; an administrative job in education or consent of instructor. Advanced level field experience covering special topics in educational administration. Individually planned and guided tasks in an area of specialized study, selected in consultation with faculty and executed under the supervision of selected school administrators and University faculty.

EDUC 376A, Supervised Teaching in the Secondary School. (3)
Field, nine hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 174 (all may be taken concurrently); concurrent enrollment in EDUC 349A. Supervised teaching in the single subject classroom. Required of all candidates for the secondary teaching credential. Graded Satisfactory (S) or No Credit (NC).

EDUC 376B. Supervised Teaching in the Secondary School. (6)
Outside research, three hours; field, fifteen hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 174, EDUC 376A; concurrent enrollment in EDUC 349B and in one segment of EDUC 191 (E2). Supervised teaching in the single subject classroom. Required of all candidates for the secondary teaching credential. Graded Satisfactory (S) or No Credit (NC).

EDUC 376C. Supervised Teaching in the Secondary School. (12)
Field, thirty-six hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 174, EDUC 376A, EDUC 376B; concurrent enrollment in EDUC 349C. Supervised teaching in the single subject classroom. Required of all candidates for the secondary teaching credential. Graded Satisfactory (S) or No Credit (NC).

EDUC 378A. Intern Teaching in the Secondary School. (10)
Field, thirty hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 174; concurrent enrollment in EDUC 348A. Intern teaching in the single subject classroom. Required for the Single Subject Internship credential. Supervised by the Single Subject Internship program. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 378A or EDUC 378B.

EDUC 378B. Intern Teaching in the Secondary School. (10)
Field, thirty hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 174; concurrent enrollment in EDUC 348B. Intern teaching in the single subject classroom. Required for the Single Subject Internship credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 378A or EDUC 378B.

EDUC 378C. Intern Teaching in the Secondary School. (10)
Field, thirty hours. Prerequisite(s): EDUC 110, EDUC 139, EDUC 174, EDUC 378A, EDUC 378B; concurrent enrollment in EDUC 348C. Intern teaching in the single subject classroom. Required for the Single Subject Internship credential. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of EDUC 378A or EDUC 378B.

EDUCATION ABROAD PROGRAM

Abbreviation: EAP
John A. Marcum, Ph.D., Director, Universitywide Program Office, UC Santa Barbara
UCR Representatives
Robert W. Patch, Ph.D., Director, EAP
Diane Elton, Director, International Services Center
O f i c e , W a t k i n s H o u s e , I n t e r n a t i o n a l S e r v i c e s C e n t e r ( 9 0 9 ) 7 8 7 - 4 1 1 3
http://www.ucr.edu/intlsvcs

PURPOSE
Recognizing its role in preparing tomorrow's citizens, the Education Abroad Program (EAP) offers students the opportunity to experience a different culture while earning UC credit. Established in 1961, the EAP serves students at all UC campuses and is centrally administered from UC Santa Barbara. International study options are available in 35 countries throughout the world, and more than 2,000 UC students annually take part in the program. One of the distinctive features of EAP is the emphasis placed on the full integration of the UC students into the curricular and extra-curricular life of the host university.

Most of the program study centers are directed by a UC faculty member in residence. The directors and staff advise students on academic, cultural, social, and personal matters and the centers serve as an information center for cultural and social opportunities.

Benefits of the international experience affect a student's academic achievement, personal life, and future career. Simulation of general intellectual development, enhancement of independent study and second language skills, an increase of self-awareness, clarification of life purposes, and a broadening and deepening of personal values are a few of the advantages gained from this opportunity.

ACADEMIC PROGRAM
The academic programs at each center vary widely. Students at most locations are directly enrolled in the regular, foreign university system. Participants may take courses for credit in their UC major and often enhance their UC education by taking courses not available at UC. The study center director facilitates the academic work of the students through liaison with faculty at the host university.

Spanning all continents, EAP offers traditional academic year and short-term programs. Students who want to gain basic foreign language skills have Language and Society options. Thematic options include Engineering in Hong Kong and Japan, Tropical Biology in Costa Rica, Asian Development Studies, and Health Sciences. Students anticipating a business career have a broad range of locations to enhance their preparation, including in-depth study on NAFTA, the European Union, and Central Europe. Internships can be arranged in nearly all fields of study. Future teachers, in particular, have benefited from teaching opportunities in China, Japan, and Mexico. Undergraduates have several possibilities to conduct field research in Costa Rica, Ghana, China, and South Africa.

Depending upon the study center, EAP also provides a 5 to 10 week Intensive Language Program (ILP) which prepares students for the new country and academic system by augmenting the prerequisite language background.

Information on specific areas of strengths and excellence for host institutions is available at the International Services Center. Below is a list of countries and universities participating in the EAP during the 2000-2001 academic year:

Armenia
Yerevan– American University of Armenia
Australia
Adelaide- The Flinders University of South Australia
Adelaide- The University of Adelaide
Brisbane- The University of Queensland
Canberra- The Australian National University
Hobart- University of Tasmania
Melbourne- La Trobe University
Melbourne- Monash University
Melbourne- The University of Melbourne
Perth- The University of Western Australia, Perth
Sydney- The University of New South Wales
Sydney- University of Sydney
Wollongong City- University of Wollongong
Austria
Vienna- University of Vienna

Barbados
Cave Hill- University of the West Indies

Brazil
Rio de Janeiro- Pontifical Catholic University of Rio de Janeiro

Canada
Vancouver- The University of British Columbia

Chile
Santiago- Pontifical Catholic University of Chile, Santiago
Santiago- University of Chile

China
Beijing- Beijing Normal University
Beijing- Peking University

Costa Rica
Monteverde- Monteverde Institute
San José- University of Costa Rica

Denmark
Copenhagen- Denmark's International Study Program
Copenhagen- University of Copenhagen

Egypt
Cairo- The American University in Cairo

France
Bordeaux- University of Bordeaux
Crenoble- University of Grenoble
Lyon- École Normale Supérieure
Lyon- University of Lyon
Paris- École Normale Supérieure, rue d’Ulm
Paris- Institut d’Études Politiques (Sciences Po)
Paris- Paris Center for Critical Studies
Toulouse- University of Toulouse

Germany
Bayreuth- University of Bayreuth
Berlin- Free University
Berlin- Humboldt University
Berlin- Technical University of Berlin
Göttingen- Georg-August University of Göttingen
Potsdam- University of Potsdam

Ghana
Kumasi- Kwame Nkrumah University of Science and Technology
Legon- University of Ghana

Hong Kong SAR
(Separate Administrative Region)
Hong Kong- The Chinese University of Hong Kong
Hong Kong- Hong Kong University of Science and Technology
Hong Kong- University of Hong Kong

Hungary
Budapest- Central European University
Budapest- Eötvös Loránd University

India
Delhi- University of Delhi

Indonesia (suspended for 2000-2001)

Ireland
Cork- National University of Ireland, Cork
Dublin- University of Dublin
Galway City- National University of Ireland, Galway

Israel
Beersheva- Ben Gurion University of the Negev
Jerusalem- The Hebrew University of Jerusalem
Kibbutz Ketura- Arava Institute for Environmental Studies

Italy
Bologna- University of Bologna
Milan- Bocconi University
Padua- University of Padua
Pisa- The Scuola Normale Superiore
Siena- University of Italian Studies for Foreigners
Venice- University Ca’ Foscari
Venice- University Institute of Architecture

Japan
Kyoto- Doshisha University
Kyoto- Kyoto University
Osaka- Osaka University
Sendai- Tohoku University
Tokyo- International Christian University
Tokyo- Hitotsubashi University
Tokyo- Sophia University
Tokyo- Tokyo Institute of Technology
Tokyo- The University of Tokyo (Hongo and Komaba campuses)
Tsukuba Science City- University of Tsukuba
Tsuru City- Tsuru University
Yokohama- Meiji Gakuin University

Korea
Seoul- Ewha Woman’s University
Seoul- Korea University
Seoul- Yonsei University

Mexico
Mexico City- National Autonomous University of Mexico
Monterrey- Institute of Technology (ITESM)
Morelia- San Nicolás de Hidalgo University of Michoacan

The Netherlands
Maastricht- Maastricht University
Utrecht- Utrecht University

New Zealand
Auckland- University of Auckland
Canterbury- Lincoln University
Christchurch- University of Canterbury
Dunedin- University of Otago
Hamilton- University of Waikato
Palmerston North- Massey University
Wellington- Victoria University

Philippines
Manila- Ateneo University
Manila- University of the Philippines

Russia
Moscow- European University

Singapore
Singapore- National University of Singapore

South Africa
Cape Town- University of Cape Town
Durban- University of Natal
Pietermaritzburg- University of Natal

Spain
Alcalá de Henares- University of Alcalá de Henares
Barcelona- Autonomous University of Barcelona
Barcelona- University of Barcelona
Córdoba- University of Córdoba
Granada- University of Granada
Madrid- Carlos III University
Madrid- Complutense University of Madrid

Sweden
Lund- University of Lund

Taiwan
Taipei- National Taiwan University
Subsequent fulfillment of major and degree earned in the intensive language program.

to record units and grade points earned during the academic year in addition to units and at the host university. Students are required to obtain clearance of the University's graduation residence requirement from their college dean.

Senior students must receive clearance of the University's graduation residence requirement from their college dean. Refer to the Residence Requirement section under Academic Regulations.

To record units and grade points earned through EAP on the participant's UCR transcript, students are concurrently enrolled at UCR and the host university. Students are expected to complete a minimum of 36 units during the academic year in addition to units earned in the intensive language program. Subsequent fulfillment of major and degree requirements depends upon UC departmental and campus criteria.

Eligibility and Selection

Selection of UC undergraduates is subject to the following minimum qualifications for most programs: 3.00 cumulative grade point average from the time of application through departure; junior standing by departure (except for specific short-term programs); support of the UCR Selection Committee; and completion with a "B" average of any required language courses. In addition to academic criteria, the Selection Committee attaches much importance to indications of the student's seriousness of purpose, maturity, knowledge of the host country and the United States, and the capacity to adapt to the experience of study abroad. Prior to departure, selected students are required to take a language proficiency test where applicable.

Eligible transfer students must have completed at least one-quarter in residence in the University of California prior to EAP participation. Graduate students who have completed at least one year of graduate work and have the approval of their department and the Graduate Division are eligible for some EAP study centers. Foreign language proficiency, if required, must be demonstrated. Graduate students remain under the academic direction of their UCR graduate advisor. An EAP experience may prove especially valuable to doctoral candidates who have been advanced to candidacy and are engaged in independent study and research directed toward their dissertation.

Financial Matters

EAP participants pay the same UC and campus fees and are responsible for room and board, books and academic supplies, and personal expenses. The only additional costs directly related to the program are for round-trip transportation, on-site orientation, and, if required, intensive language instruction. The University shares the cost of comprehensive medical and hospitalization coverage for all participants.

Many forms of financial assistance are available to EAP participants. Students receiving state and federal financial aid may use their scholarships, grants, and loans to finance their program abroad. In addition to campus-awarded financial aid, EAP provides support through various scholarships and grants. Prospective participants should consult early with the Financial Aid Office and the EAP counselor.

Student Conduct

Students selected for the Education Abroad Program will have made a serious commitment to profit from all aspects of their international experience. As guests in another country and another university, their conduct will reflect on both the University of California and the United States. Students are responsible to the study center director, to the Director of EAP, to the faculty of UC, and to the faculty of the host university related to the program. The Director of EAP reserves the right to terminate the participation in the program of any student whose conduct (in either academic or nonacademic matters), after careful consideration and full review, is judged to be contrary to the standards and regulations of the University of California and the host university.

Study center directors are available to students and are responsible for all aspects of student welfare and conduct.

Application

Applications for 2001-2002 will be available beginning September 2000. Students are encouraged to consult counselors in the International Services Center early since filing dates are one year prior to participation. The Center is located in Watkins House, next to Bannockburn, or call (909) 787-4113. Program details are available at http://www.ucr.edu/intlsvcs.

ELECTRICAL ENGINEERING

Subject abbreviation: EE

Jay A. Farrell, Ph.D., Chair
Department Office, A220 Bourns Hall
(909) 787-2423; http://www.ee.ucr.edu

Professors
Gerardo Beni, Ph.D.
Bir Bhanu, Ph.D.
Jie Chen, Ph.D.
Ilya Dumer, Ph.D.
Susan Hackwood, Ph.D.

Associate Professors
Matthew J. Barth, Ph.D.
Jay A. Farrell, Ph.D.
Roger Lake, Ph.D.
Ping Liang, Ph.D.

Assistant Professors
Alexander Balandin, Ph.D.
Alexander Korotkov, Ph.D.
Zhenguan Xu, Ph.D.

Adjunct Professor
Hossny El-Sherief, Ph.D.
Cooperating Faculty

John deFillis, Ph.D. (Mathematics)
Michalis Faloutsos, Ph.D.
(Computer Science and Engineering)
Qing Jiang, Ph.D. (Mechanical Engineering)
Keh-Shin Li, Ph.D. (Statistics)
Marti Molle, Ph.D.
(Computer Science and Engineering)
J. Keith Oldson, Ph.D. (Mathematics)
S. James Press, Ph.D. (Statistics)
Harry W. Tom, Ph.D. (Physics)
Frank Vahid, Ph.D.
(Computer Science and Engineering)
Anders O. Wistrom, Ph.D. (Chemical and Environmental Engineering)

MAJOR

The Department of Electrical Engineering, one of the newest in the country, offers B.S., M.S., and Ph.D. degrees in Electrical Engineering. The undergraduate curriculum is accredited by the Accreditation Board for Engineering and Technology. Instruction reflects the latest significant technological advancements and is supported by well-equipped laboratories with the most advanced equipment. Faculty are world-class educators and researchers dedicated to teaching.

Two features of the undergraduate program are small class size with close faculty-student interaction, and research opportunities for undergraduates. Students may choose from among the following focus areas: circuits; signals and communication; control, robotics, and manufacturing; and intelligent systems. The major curriculum is accredited by the Accreditation Board for Engineering and Technology.

During their freshman year, all engineering students follow a common curriculum of mathematics and science. By the beginning of the sophomore year, students begin more specific course work toward their selected major. Students enrolled in community college pre-engineering programs are expected to complete the equivalent of the first two years of UCR’s course work for engineering majors and to demonstrate strength in calculus and physics. The Intersegmental General Education Transfer Curriculum (IGETC) does not meet transfer requirements for Engineering. The Marian and Rosemary Bourns College of Engineering provides special advisory services to aid community college transfer students in formulating their program and in remedying any deficiencies in required course work.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements. The Marlan and Rosemary Bourns College of Engineering, in the Undergraduate Studies Section, for requirements that students must satisfy.

Courses used to fulfill the College requirements must be selected from an approved list available in The College Office of Student Affairs. To provide depth in satisfying breadth in the Humanities and Social Sciences, courses must meet the following criteria:

1. At least two of the Humanities and/or Social Science courses must be upper-division.
2. At least two courses must be from the same subject area (for example, two courses in History), with at least one of the two being an upper-division course.

The Electrical Engineering major uses the following major requirements to satisfy The College’s Natural Sciences and Mathematics breadth requirement:
1. One course in the biological sciences chosen from an approved list
2. CHEM 001A-CHEM 001B
3. MATH 009A
4. PHYS 040A

Major Requirements

The major requirements for the B.S. degree in Electrical Engineering are as follows:
1. Lower-division requirements (71 units)
   a) One course in the biological sciences chosen from an approved list
   b) CHEM 001A-CHEM 001B
   c) CS 010, CS 061
   d) EE 001A, EE 011A, EE 011B
   e) MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B, MATH 046
   f) ME 010
   g) PHYS 040A, PHYS 040B, PHYS 040C
2. Upper-division requirements (74 units)
   a) EE 100A, EE 100B, EE 105, EE 110A, EE 110B, EE 115, EE 116, EE 132, EE 141, EE 175A-EE 175B
   b) CS 120A/EE 120A, CS 120B/EE 120B
   c) Twenty (20) units of technical electives (chosen with the approval of a faculty advisor) from CS 130, CS 161, CS 168; EE 102, EE 117, EE 128, EE 133, EE 140, EE 144, EE 146, EE 150, EE 151, EE 152; CS 143/EE 143

Sample Program

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<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
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<tr>
<td>MATH 009A-MATH 009B</td>
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<td>EE 001A, EE 001A, EE 001B</td>
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<td>ME 010</td>
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<tr>
<td>Humanities/Social Sciences</td>
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<td>Biological Science Elective</td>
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<tr>
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<td>CS 120A/EE 120A, CS 120B/EE 120B</td>
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<td>Humanities/Social Sciences</td>
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<tr>
<td>Total Units</td>
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GRADUATE PROGRAM

The Bourns College of Engineering offers programs leading to M.S. and Ph.D. degrees in Electrical Engineering.

Research Focus areas currently include coding, communications, computer vision, computer visualization, control, detection and estimation, distributed systems, electronic materials, error control, image processing, information theory, intelligent sensors, intelligent systems, machine learning, modeling and simulation, multimedia, nanostructures and nanodevices, navigation, neural networks, pattern recognition, robotics and automation, signal processing, solid-state devices and circuits, system identification, and transportation systems.

All applicants for graduate status must submit official scores for the general test of the Graduate Record Examination. International students, permanent residents, and even United States citizens whose native language is not English and who do not have a bachelor’s or postgraduate degree from an institution where
English is the exclusive language of instruction will be required to complete the Test of English as a Foreign Language (TOEFL) with a minimum score of 550.

**Master's Degree**

Applicants must meet the general admission requirements of the Riverside Division of the Academic Senate and the UCR Graduate Council as set forth in the UC Riverside Graduate Student Application. In addition, applicants should have completed a program equivalent to UCR's Bachelor of Science in Electrical Engineering, or demonstrate the required knowledge and proficiency in the following subject matter which constitute the prerequisite for graduate study in Electrical Engineering:

1. Mathematics including calculus, differential equations, and complex variables
2. Circuits and electronics (equivalent of EE 001, EE 100)
3. Signals and systems (equivalent of EE 110)
4. Communication and signal processing (equivalent of EE 115, EE 141)
5. Logic design, digital systems, and microcomputers (equivalent of EE 120)
6. Control systems (equivalent of EE 132)
7. At least one major high level programming language and associated programming techniques (equivalent of CS 010)

Students with background in other scientific fields are encouraged to apply to the graduate program in Electrical Engineering. Those applicants lacking minimum undergraduate preparation in the above areas may be admitted but will be required to take the appropriate undergraduate courses. Under special circumstances, students who have not completed all undergraduate requirements may be admitted provided that the deficiencies are corrected within the first year of graduate study. Courses taken for this purpose do not count towards an advanced degree.

**Program of Master of Science**

Students may obtain an M.S. degree in Electrical Engineering through either Plan I (Thesis) or Plan II (Comprehensive Examination). In accordance with general university requirements for the M.S. degree, students must complete a minimum of three quarters in residence in the University of California, Riverside, with a GPA of 3.00 or better. Normative time for a student to complete the M.S. degree under both Plan I or Plan II is five quarters. Students who are admitted with deficiencies may require up to three additional quarters.

**M.S. Plan I (Thesis)**

Thirty-six quarter units of graduate or upper-division undergraduate work in Electrical Engineering and other approved subject areas are required to complete Plan I. At least 24 of these units must be in graduate-level courses. Of these, at least 6, but no more than 10 units may be in graduate research for the thesis (courses numbered 297 or 299). The required and approved courses in each area are determined by the Electrical Engineering Graduate Program Committee.

**Master's Thesis.** An M.S. thesis on a research topic must be submitted and approved by the Electrical Engineering faculty. The thesis must demonstrate an in-depth knowledge by the student of the chosen research topic. Publishable results are encouraged. The thesis must be typed and formatted according to the regulations set forth by the Graduate Division.

**Thesis Examination and Defense.** The thesis defense is a two-hour examination session open to the public which begins with a brief presentation of the thesis by the candidate and is followed by a question/answer session.

**M.S. Plan II (Comprehensive Examination)**

The same requirements as in Plan I apply, except that at least 20 quarter units of graduate level courses taken at a University of California campus are required, and none of these credits can be in courses numbered 297 or 299. A Plan II M.S. requires permission from the Graduate Advisor.

**M.S. Comprehensive Examination.** In addition to the course work, the students enrolled in Plan II are required to take the M.S. Comprehensive Examination. The M.S. Comprehensive Examination is structured as a subset of and is conducted jointly with the Ph.D. Preliminary Examination.

The Comprehensive Examination emphasizes the fundamental knowledge of the study area rather than the specifics covered in individual courses. Candidates must solve at least six problems in at least three different major areas. No more than three problems may be chosen from the student's major area of specialization (i.e., communications and signal processing; control, robotics, and manufacturing; intelligent systems; circuits, materials, and devices).

**Doctoral Degree**

An M.S. or equivalent degree in Electrical Engineering or a related field is normally required to be admitted to the Ph.D. program. Exceptional applicants may be admitted directly into the Ph.D. program without an M.S. degree. Students with backgrounds in other scientific fields are encouraged to apply to the graduate program in Electrical Engineering. Those applicants lacking minimum undergraduate preparation in the above areas may be admitted but will be required to take the appropriate undergraduate courses. Under special circumstances, students who have not completed all undergraduate requirements may be admitted provided that the deficiencies are corrected within the first year of graduate study. Courses taken for this purpose do not count towards an advanced degree.

There is no strict course or unit requirement for the Ph.D. degree. The Electrical Engineering faculty recommends a minimum of 36 quarter units of 100- or 200-level course work (excluding EE 297 or EE 299), be taken while in graduate standing as evidence of preparation for the doctoral qualifying exam. The courses may include graduate course work used for the M.S. degree.

For the Ph.D. degree, students must complete a minimum of six quarters in residence in the University of California with a GPA of 3.00 or better. Normative time for a student to complete the Ph.D. degree is three years for students holding an M.S. degree in Electrical Engineering, and five years for those who entered the program without an M.S. in Electrical Engineering.

**Study Plan.** A student admitted to the Ph.D. program is required to submit a formal study plan before the end of their second quarter of academic residency. Initially, the plan lists the student's entire expected program of course work. After passing the Preliminary Examination, an amended version of the study plan must be submitted to and approved by the student's Doctoral Committee.

**Course Work.** A Ph.D. student in Electrical Engineering is required to establish a major subject area. A coherent program of approximately 24 units of graduate course work in the major area is recommended. Students may need to take considerably more than the 24 units in the major area to prepare for the Ph.D. research. The balance of the courses should lend support to the major field of study while adding breadth to the student's overall program. These courses may consist of Electrical Engineering courses in an area distinctively different from the major area and/or courses from other campus departments.

**Ph.D. Preliminary Examination.** The purpose of the Ph.D. Preliminary Examination is to screen candidates for continuation in the doctoral program. The exam is administered by the Electrical Engineering Graduate Program Committee, and is combined with the M.S. Comprehensive Exam. Candidates must solve at least six problems in at least three different major areas. No more than three prob-
Plan II M.S. candidates who took the combined M.S. Comprehensive and Ph.D. Preliminary Exam and successfully passed all six questions at the Ph.D. level will be given credit for having passed the Ph.D. Preliminary Exam.

Dissertation Proposal and Qualifying Examination. After passing the Ph.D. Preliminary Examination, doctoral candidates must prepare and submit a Dissertation Proposal to his or her Qualifying Exam Committee before the Qualifying Examination. The format of the proposal is flexible, but the proposal should clearly indicate the proposed problem under study, demonstrate substantial knowledge of the topic and related issues, state the progress made towards a solution, and indicate the work remaining to be done. The new approaches and methods to be used in the research should also be discussed. An extensive bibliography for the problem under study should be attached to the proposal.

The oral qualifying examination focuses on the dissertation proposal. It includes considerable depth in the student's area of specialization, as required for a successful completion of the dissertation. The examination is a three-hour session which begins with a presentation on the dissertation topic by the student, and is followed with questions and suggestions by the Doctoral Committee.

Dissertation. A doctoral dissertation should be an original and substantial contribution to knowledge in the student's major field. It must demonstrate the student's ability to carry out a program of independent advanced research and to report the results in accordance with standards observed in recognized scientific journals.

Dissertation Examination and Defense. When the Doctoral Committee determines that a suitable draft of the dissertation has been presented, a Dissertation Examination and Defense for the student will be scheduled. The defense consists of a public seminar followed by questions from the committee members and the audience.

Preparation for Careers in Teaching. All doctoral students are recommended to be employed as teaching assistants for at least three quarters during their graduate career. The department is developing special courses to aid in the learning of effective teaching methods, such as handling discussion/lab sessions and preparing and grading examinations.

Please contact the Graduate Student Affairs Assistant at the Department of Electrical Engineering, (909) 787-2404, or visit the department's Web site at http://www.ee.ucr.edu for information on graduate courses.

LOWERING DIVISION COURSES

EE 001A. Engineering Circuit Analysis I. (3)
Lecture, three hours. Prerequisite(s): MATH 046, PHYS 040C (both may be taken concurrently). Concurrent enrollment in EE 011A. Ohm's law and Kirchoff's laws; nodal and loop analysis; analysis of linear circuits; network theorems; transients in RLC circuits. Application of SPICE to circuit analysis.

EE 001B. Engineering Circuit Analysis II. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 001A and EE 011A. Sinusoidal steady state analysis, phasor networks, time invariant operators, matrix methods, frequency characteristics, Laplace and Fourier transforms, Laplace and Fourier analysis. Application of SPICE to complicated circuit analysis.

EE 01A. Engineering Circuit Analysis I Laboratory. (1)
Laboratory, three hours. Prerequisite(s): EE 001A (may be taken concurrently). Laboratory experiments closely tied to the lecture material of EE 001A resistive circuits, attenuation and amplification, network theorems and superposition, operational amplifiers, transient response, application of SPICE to circuit analysis.

UPPER DIVISION COURSES

EE 100A. Electronic Circuits. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 010. Electronic circuits, operational amplifiers, diodes, nonlinear circuit applications, junction and metal-oxide-semiconductor field-effect transistors, bipolar junction transistors, and bipolar digital circuits.

EE 100B. Electronic Circuits. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 100A. Differential and multistage amplifiers, output stages and power amplifiers, frequency response, feedback, analog integrated circuits, filters, tuned amplifiers, and oscillators.

EE 102. Analog Integrated Circuits. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 100B. Design, analysis, and application of analog integrated circuits. Topics include introduction to integrated circuit fabrication, IC active filters and switched-capacitor circuits, current-feedback, and transconductance operational amplifiers, voltage comparators and regulators, video amplifiers, and phase-locked loops.

EE 105. Modeling and Simulation of Dynamic Systems. (4)

EE 110A. Signals and Systems. (4)
Lecture, three hours, laboratory three hours. Prerequisite(s): CS 010; EE 001B (may be taken concurrently); MATH 046. Basic signals and systems, linear time-invariant (LTI) systems, Fourier analysis, frequency response, and Laplace transforms for LTI systems. Laboratory experiments with signals, transforms, harmonic generation, digital filtering, and sampling/aliasing.

EE 110B. Signals and Systems. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 110A. Fourier analysis for discrete-time signals and systems. Filtering, modulation, sampling and interpolation, z-transforms. Laboratory experiments with signals, transforms, harmonic generation, linear digital filtering, and sampling/aliasing.

EE 115. Introduction to Communication Systems. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 001B and EE 110B. Spectral density and correlation, modulation theory, amplitude, frequency, phase and analog pulse modulation and demodulation techniques, signal-to-noise ratios, and system performance calculations. Laboratory experiments in techniques of modulation and demodulation.

EE 116. Engineering Electromagnetics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 001B (may be taken concurrently). Transmission lines, fields and field operators, electrostatic and magnetostatic fields, time-varying fields, electrodynamic, electromagnetic waves, plane waves, guided waves, and applications to engineering problems.

EE 117. Electromagnetics II. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 116. Applications of Maxwell's equations. Skin effect, boundary-value problems, plane waves in lossy media, transverse EM waves, hollow metal waveguides, cavity resonators, microstrips, propagation in dielectrics and optical fibers, optical fibers applications, radiation, and antennas.

EE 118. Introduction to Electromagnetic Devices. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 116. An introduction to electromagnetic devices for students interested in mechatronics, robotics, control, computer peripherals, and energy or power systems areas. Emphasizes rotational devices commonly used in low-power automation systems. Analyzes permanent magnet DC machines, two-phase induction, brushless DC, and stepper motors.

EE 120A. Logic Design. (5)
Lecture, three hours; laboratory; six hours. Prerequisite(s): CS 010. Number systems and binary codes. Boolean algebra. Digital circuits. Combinational and sequential logic design principles and practices. Combinational and sequential programmable logic devices. Computer-aided design (CAD) and engineering of digital systems. Cross-listed with CS 120A.

EE 120B. Introduction to Embedded Systems. (5)
Lecture, three hours; laboratory, eight hours. Prerequisite(s): CS 120A/EE 120A. A study of design methodology and digital systems at the register and
processor level. Topics include arithmetic, processors, microprocessor architecture, memory, input/output (I/O) support, and peripherals. Studies digital to analog and analog to digital (A/D) converters, serial and parallel data transmission, memory access, and microprocessor-based digital systems. Cross-listed with CS 120B.

EE 128. Data Acquisition, Instrumentation, and Process Control. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 120A/EE 120A, EE 100B; or consent of instructor. Analog signal transducers, conditioning and processing, stepping motors, DC servos, motors, and other actuators; analog to digital and digital to analog converters; data acquisition systems; microcomputer interface to commonly used sensors and actuators; design principles for electronic instruments, real-time process control and instrumentation.

EE 132. Automatic Control. (4)
Lecture, three hours; laboratory three hours. Prerequisite(s): EE 110A or ENGR 118 or consent of instructor. Mathematical modeling of linear systems for time and frequency domain analysis. Transfer function and state variable representations for analyzing stability, controllability, and observability. Close-loop control design techniques by Bode, Nyquist and root-locus diagrams. Laboratories involve both simulations and hardware.

EE 133. Solid-State Electronics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 100A. Presents the fundamentals of solid-state electronics. Topics include electronic band structure, Fermi and quasi-Fermi levels; doping; contacts; junctions; field-effect, bipolar, and metal-oxide-semiconductor (MOS) transistors; and charge-coupled devices. Also reviews device fabrication concepts.

EE 140. Computer Visualization. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 130. Visual perception and thinking, operations on digital images, shaded pictures, perspective transformation, picture generation using solid polyhedra, illumination and color models, ray tracing, special effects and animation. Laboratories on visual realism methods: dithering, halftoning, 3-D viewing, and rendering.

EE 141. Digital Signal Processing. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 110B. Transform analysis of linear, time-invariant (LTI) systems, discrete Fourier Transform (DFT) and its computation, Fourier analysis of signals using the DFT, filter design techniques, structures for discrete-time systems. Laboratory experiments on DFT, fast Fourier transforms (FFT), infinite impulse response (IIR), and finite impulse response (FIR) filter design, and quantization effects.

EE 143. Multimedia Technologies and Programming. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 010 or knowledge of an object-oriented or fourth-generation (scripting) programming language, for example, C++, HyperTalk, SuperTalk, Lisp, ObjectScript, and Prolog. Introduces multimedia technologies and programming techniques, multimedia hardware devices, authoring languages and environments, temporal and nontemporal media (interactivity in text, graphics, audio, video, and animation), applications, and trends. A term project is required. Cross-listed with CS 143.

EE 144. Introduction to Robotics. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 132. Basic robot components from encoders to microprocessors. Kinematic and dynamic analysis of manipulators. Open-and closed-loop control strategies, task planning, contact and noncontact sensors, robotic image understanding, and robotic programming languages. Experiments and projects include robot arm programming, robot vision, and mobile robots.

EE 146. Computer Vision. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): senior standing in Computer Science or Electrical Engineering, or consent of instructor. Imaging formation, early vision processing, boundary detection, region growing, two-dimensional and three-dimensional object representation and recognition techniques. Experiments for each topic are carried out.

EE 150. Digital Communications. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 115. Review of modulation, probability and random variables, correlation and power spectra, information theory, errors of transmission, equalization and coding methods, shift and phase keying; comparison of digital communication systems. Open-ended laboratory experiments include sampling, modulation, synchronization, and systems design.

EE 151. Introduction to Digital Control. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 132, EE 141. Review of continuous-time control systems; review of Z-transform and properties; sampled-data systems; stability analysis and criteria; frequency domain analysis and design; transient and steady-state response; state-space techniques; controllability and observability; pole placement; observer design; Lyapunov stability analysis. Laboratory experiments complementary to these topics include simulations and hardware design.

EE 152. Image Processing. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 110B. Digital image acquisition, image enhancement and restoration, image compression, computer implementation and testing of image processing techniques. Students gain hands-on experience of complete image processing systems, including image acquisition, processing, and display through laboratory experiments.

EE 175A-EE 175B. Senior Design Project. (4-4) W,S
Laboratory, nine hours; consultation, one hour. Prerequisite(s): senior standing in Electrical Engineering. Under the direction of a faculty member, students (individually or in small teams with shared responsibilities) propose, design, build, and test electrical engineering devices or systems. A written report, giving details of the project and test results, and an oral presentation of the design aspects are required. An In Progress (IP) grade is assigned for EE 175A. A letter grade is given for 175B.

EE 191. (E-Z). Seminar in Electrical Engineering. (1-4)
Seminar, one to four hours. Prerequisite(s): upper division standing or consent of instructor. Consideration of current topics in electrical engineering.

EE 194. Independent Reading. (1-2)
Extra reading, three to six hours. Prerequisite(s): upper division standing or consent of instructor. Independent reading in material not covered in course work. Normally taken in senior year. Course is repeatable to a maximum of 4 units.

EE 200. Solid-State Devices and Circuits. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 133 or equivalent. Covers electronic devices and circuits including p-n junctions, field-effect transistors, heterojunction bipolar transistors, and nanodevices. Explores electrical and optical properties of semiconductor heterostructures, superlattices, quantum wires and dots, as well as devices and circuits based on these structures.

EE 201. Fundamentals of Semiconductors and Nanomaterials. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 133. Examines principles of semiconductor materials and nanostructures. Topics include periodic structures, electron and phonon transport, defects, optical properties, and radiative recombination. Also covers absorption and emission of radiation in nanostructures, and nonlinear optics effects. Emphasizes properties of semiconductor superlattices, quantum wells, wires, and dots.

Lecture, three hours; discussion, one hour. Prerequisite(s): EE 110B, EE 141. Provides in-depth coverage of advanced techniques for digital filter and power spectral estimation. Topics include digital filter design, discrete random signals, finite-wordlength effects, nonparametric and parametric power spectrum estimation, multirate digital signal processing, least squares methods of digital filter design, and digital filter applications.

EE 211. Adaptive Signal Processing. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 210, EE 215, EE 236. Provides an in-depth understanding of adaptive signal processing techniques. Covers Widrow decomposition, Yale-Walker equations, spectrum estimation, Wiener filters, linear prediction, Kalman filtering, time-varying system tracking, nonlinear adaptive filtering, and performance analysis of adaptive algorithms and their variations including stochastic gradient, least mean square, least squares, and recursive least squares.

EE 215. Stochastic Processes (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 210, EE 235. A study of probability theory and stochastic processes with a focus on the most fundamental aspect of modern communication, control, and signal processing systems driven by random signal inputs. Topics include random variables and stochastic processes, spectral analysis, Wiener optimum filter, matched filter, and matched filters; Karhunen-Loeve expansion; mean square estimation theory including smoothing, filtering, and linear prediction; Levinson’s algorithm, lattice filters, and Kalman filters; and the Markov process.

EE 224. Digital Communication Theory and Systems. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 115; MATH 149A-MATH 149B or STAT 160A-STAT 160B; or equivalents. Provides an overview of basic communication techniques and an introduction to optimum signal detection and correction. Topics include sampling and bandwidth, pulse code modulation, line coding and pulse shaping, delta modulation, stochastic approach to bandwidth and noise corruption, while Gaussian noise; matched filter, optimum signal detection; Shannon theorem; and error correction.

EE 225. Error-Correcting Codes (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 215, EE 224. Provides an overview of...
basic error-correcting techniques used in data transmission and storage. Topics include groups and Galois fields, error-correction capability and code design of Hamming codes, cyclic codes, Bose-Chaudhuri-Hocquengem (BCH) codes, and Reed-Solomon codes. Also considers concatenated design and decoding techniques.

EE 226. Wireless Communications. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 215, EE 224. Presentation of fundamental cellular concepts and new techniques in wireless communications. Topics include cellular systems and standards, frequency reuse, system capacity, channel allocation, cellular radio propagation, fading channel modeling and equalization, spread spectrum communications and other multiple access techniques, and wireless networking.

EE 235. Linear System Theory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 132, MATH 113. Provides a review of linear algebra. Topics include the mathematical description of linear systems, the solution of state-space equations, controllability, observability, canonical and minimal realization, and state feedback, pole placement, observer design, and compensator design.

EE 236. State and Parameter Estimation Theory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 235 or equivalent. Covers autoregressive and moving-average models, state estimation and parameter identification (including least square and maximum likelihood formulations), observability theory, synthesis of optimum inputs, Kalman-prediction (filtering and smoothing), steady-state and frequency domain analysis, on-line estimation, colored noise, and nonlinear filtering algorithms.

EE 237. Nonlinear Systems and Control. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 235. Explores nonlinear systems and control. Topics include nonlinear differential equations, second order nonlinear systems, equilibrium and phase portrait, limit cycle, harmonic analysis and describing function, Lyapunov stability theory, absolute stability, Popov and circle criterion, input-output stability, small gain theorem, averaging methods, and feedback linearization.

EE 238. Linear Multivariable Control. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 235. Investigates multivariable feedback systems, stability, performance, uncertainty and robustness. Topics include analysis and synthesis via matrix factorization; Q-parameterization and all stabilizing controllers; frequency domain methods; and H2/Hn (infinity) design and structured singular value analysis.

EE 239. Optimal Control. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 215, EE 235. Presents the theory of stochastic optimal control systems and methods for their design and analysis. Covers principles of optimization, Lagrange's equation, linear-quadratic-Gaussian control; certainty-equivalence; the minimum principle; the Hamilton-Jacobi-Bellman equation; and the algebraic Riccati equation.

EE 240. Pattern Recognition. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): EE 141 or consent of instructor. Covers basic of pattern recognition techniques. Topics include hypothesis testing, parametric classifiers, parameter estimation, nonparametric density estimation, nonparametric classifiers, feature selection, discriminant analysis, and clustering.

Lecture, three hours; outside research, three hours. Prerequisite(s): EE 152 or consent of instructor. Covers advanced topics in digital image processing. Examines image sampling and quantization, image transforms, stochastic image models, image filtering and restoration, and image data compression.

EE 242. Intelligent Systems. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Introduces fundamental concepts of design of intelligent systems. Topics include biological versus computational systems, knowledge representation, computational reasoning, computational learning, language and human-machine communication, expert systems, computational vision, and examples of intelligent machines.

EE 243. Advanced Computer Vision. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): EE 146 or consent of instructor. A study of three-dimensional computer vision. Topics include projective geometry, modeling and calibrating cameras, representing geometric primitives and their uncertainty, stereo vision, motion analysis and tracking, interpolating and approximating three-dimensional data, and recognition of two-dimensional and three-dimensional objects.

EE 244. Computational Learning. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Explores fundamental computational learning techniques. Topics include elements of learning systems, inductive learning, analytic learning, case-based learning, genetic learning, connectionist learning, reinforcement learning and integrated learning techniques, and comparison of learning paradigms and applications.

EE 245. Advanced Robotics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 144, EE 235. Topics include robotics, mechatronics, and automation systems; design and analysis; mechanics, sensing and programming; linear and nonlinear control; rigid and flexible systems; redundant robots; perception-driven action; multi-robot cooperation; distributed autonomous robotic systems; programming languages and tools; simulations techniques; and application to mechatronics, manufacturing, and biomorphic systems.

EE 250. Information Theory. (3)
Seminar, three hours. Prerequisite(s): EE 215, EE 225. Provides an overview of general limitations imposed on communication systems. Topics include source and channel models, information as a stochastic concept, coding for discrete sources, stochastic models for discrete channels, coding theorems for channels with noise, and coding techniques for block and convolutional codes. Satisfactory (S) or No Credit (NC) grading is not available.

EE 259. Research for the Thesis or Dissertation. (1-12)
Outside research, three to thirty-six hours. Prerequisite(s): graduate standing. Consent of instructor. Research conducted under the supervision of a faculty member on selected topics in electrical engineering. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENGR 091. Freshman Seminar. (1)
Advising Office, A159 Bourns Hall (909) 787-5651; http://www.engr.ucr.edu

Courses in Engineering are a multidisciplinary approach to providing students with training in concepts common to multiple engineering fields. The courses support the undergraduate programs in Chemical, Environmental, and Mechanical Engineering. Refer to these programs in this section of the catalog for information on course application.

LOWER-DIVISION COURSES

ENGR 010. Introduction to Engineering. (2)
Discussion, one hour; laboratory, three hours. Prerequisite(s): none. Introduction to the culture with common everyday engineering and technology devices. Aims to enrich students' appreciation of technology and the application of simple science and engineering concepts in the design and operation of these devices, and to provide students with an early positive engineering experience and interaction with College of Engineering faculty. Graded Satisfactory (S) or No Credit (NC).

ENGR 091. Freshman Seminar. (1)
Seminar, one hour. Prerequisite(s): freshman standing in the College of Engineering or consent of instructor. Introduction to careers in engineering and computer science. Professional and academic opportunities; ethical responsibilities of engineers and computer scientists; current research directions; academic qualifications and skills required. Faculty and invited participants survey the various disciplines. Students keep a journal summarizing the weekly activities. A term paper is required. Enrollment is limited. Graded Satisfactory (S) or No Credit (NC).
ENGR 100. Engineering Thermodynamics. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): CHEM 001C, MATH 010A, PHYS 040B; or consent of instructor. Work and energy, first and second laws of thermodynamics, reversible processes, Carnot cycle, entropy change, heat engines and refrigerators, properties of pure substances, relationships between thermodynamic properties.

ENGR 115. Introductory Fluid Mechanics. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): MATH 010A, MATH 046, ME 010; or consent of instructor: Principles and applications of fluid mechanics. Fluid statics, conservation of momentum and energy, dynamics of incompressible and compressible flow in conduits, flow past immersed bodies, transportation and metering fluids, agitation and mixing.

ENGR 116. Heat Transfer. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): ENGR 100, ENGR 115; or consent of instructor: The analysis of steady and transient heat conduction, forced and natural convection, radiation heat transfer. Design of heat exchangers.

ENGR 118. Engineering Modeling and Analysis. (5)
Lecture, four hours; discussion, one hour.
Prerequisite(s): CHEM 001C or CHEM 01HC; CS 010; MATH 046; PHYS 040B; or consent of instructor: Formulation of mathematical models for engineering systems. Application of mass, momentum, and energy balances to derive governing differential equations. Solution of equations using spreadsheets and other software packages. Fitting linear and nonlinear models to experimental data.

ENGR 190. Special Studies. (1-5)
Individual study, three to fifteen hours.
Prerequisite(s): upper-division standing or consent of instructor. To be taken with the consent of the chair of the appropriate Engineering program as a means of meeting special curricular problems. Units in this course may not be used to meet requirements for the major unless so designated as a replacement for a requirement not being offered during the student's remaining tenure. Course is repeatable to a maximum of 9 units.

ENGR 198-I. Individual Internship. (1-12)
Internship, three to thirty-six hours.
Prerequisite(s): upper-division standing or consent of instructor; consent of off-campus supervisors and appropriate Engineering program chair. Designed to provide experience as a practicing engineer in a governmental, industrial, or research unit. Jointly supervised by an off-campus supervisor and an Engineering faculty member. Requires a written final report. Units may not be used to satisfy major requirements. Course is repeatable to a maximum of 16 units.

ENGLISH

Subject abbreviations BSWT and ENGL

George E. Haggerty, Ph.D., Chair
Deborah S.W. Illis, Ph.D., Director, English Composition
John C. Briggs, Ph.D., Director, Basic Writing
Katherine A. Kinney, Ph.D., Graduate Advisor

Gregory W. Bredbeck, Ph.D.,
Director, Undergraduate Studies
Department Office, 1201 Humanities
W.M. Keck Center, 1102 Humanities
(909) 787-4745, x1384
http://www.ucr.edu/CHSS/depts/english/englishhome.htm

Professors
Steven G. Axelrod, Ph.D.
Emory B. Elliott, Ph.D.
Robert N. Essick, Ph.D.
Carole Fabricant, Ph.D.
John M. Ganim, Ph.D.
George E. Haggerty, Ph.D.
Stanley N. Stewart, Ph.D.
Marqueta R. Waller, Ph.D.
(English/Women's Studies)

Professors Emeriti
Ruth ApRoberts, Ph.D.
Edwin M. Eigner, Ph.D.
Ralph Hanna, III, Ph.D.
William O. Harris, Ph.D.
Milton Miller, Ph.D.
John B. Vickery, Ph.D.

Associate Professors
Gregory W. Bredbeck, Ph.D.
John C. Briggs, Ph.D.
Joseph W. Childers, Ph.D.
Gregory W. Bredbeck, Ph.D.
George E. Haggerty, Ph.D.
John M. Ganim, Ph.D.
Carole-Anne Tyler, Ph.D.
Kimberly J. Devlin, Ph.D.
Josh Kun, Ph.D.
Linda Huff, Ph.D.
Jennifer Doyle, Ph.D.
Deborah S. Willis, Ph.D.
Margaret A. Warrack, Ph.D.

Assistant Professors
Jennifer Doyle, Ph.D.
Linda Huff, Ph.D.
Josh Kun, Ph.D.
Tiffany A. Lopez, Ph.D.
Amy A. Ongri, Ph.D.

The English Department offers the university community a range of composition courses that develop the skill of writing effective prose, a skill essential to undergraduate work and to communication in society generally. Students can also enjoy and profit from a broad range of literature courses offered by the Department, including a number of lower-division courses designed especially with the non-English major in mind.

MAJOR

The English major offers a well-balanced, thought-provoking program for students with a serious interest in the study of literature. Students begin the program by taking a course that introduces them to the tools of literary analysis and to a selection of literary genres. They then go on to complete a series of requirements that encourage engagement with a broad range

Degree Requirements

University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The major requirements for the B.A. in English are as follows:

1. ENGL 102 (4 units). This course should normally be taken prior to or concurrently with the student's first upper-division English course.

2. Five courses (20 units), at least 8 units of which must be at the lower-division level.
   a) English Literature to 1620: ENGL 023A, ENGL 125A, ENGL 129A, ENGL 149, ENGL 151A, ENGL 151B, ENGL 151T, ENGL 152, or ENGL 153
   b) English Literature 1620-1800: ENGL 023B, ENGL 125A, ENGL 129B, ENGL 154, ENGL 161A, ENGL 161B, or ENGL 161T
   c) English Literature 1800-1900: ENGL 023C, ENGL 125B, ENGL 166A, ENGL 166B, ENGL 166T, ENGL 172A, ENGL 172B, ENGL 172T
   d) American Literature to 1900: ENGL 031, ENGL 126A, ENGL 127A, ENGL 130, ENGL 131, ENGL 132
   e) Literature after 1900: ENGL 032, ENGL 125C, ENGL 126B, ENGL 127B, ENGL 129C, ENGL 133, ENGL 134

College of Humanities, Arts, and Social Sciences; (909) 787-4745, x1384
Writing Resource Center, 1102 Humanities
ENGL 135, ENGL 176A, ENGL 176B, ENGL 176C, ENGL 176T

3. One 4-unit course on literature and ethnicity, literature and gender, or literature and sexuality chosen from ENGL 121 (E-Z), ENGL 122, ENGL 123A, ENGL 123B, ENGL 124A, ENGL 124B, ENGL 136, ENGL 136T, ENGL 138A, ENGL 138B, ENGL 138T, ENGL 139, ENGL 139T, ENGL 143 (E-Z)/FVC 143 (E-Z), ENGL 144 (E-Z)/FVC 144 (E-Z)

4. One 4-unit course on literature and related fields, including theory, or a literary theme or genre chosen from ENGL 100 (E-Z), ENGL 101, ENGL 140 (E-Z), ENGL 141 (E-Z), ENGL 142 (E-Z), ENGL 143/E/FVC 143E, ENGL 145 (E-Z)/FVC 145 (E-Z)

5. Six additional upper-division English courses (24 units). Only 4 units from ENGL 103 or any upper-division Creative Writing course will be accepted toward the fulfillment of this requirement. Four units of ENGL 190 or four units of ENGL 199H may be counted toward this requirement. Proposals for ENGL 190 and ENGL 199H must be approved by a sponsoring faculty member and the Department Chair. If the student wishes to offer units from ENGL 190 as part of the 24 units, a copy of an approved petition will be placed in the student's file.

Total units in major: 56 units, at least 8 units and no more than 20 units of which must be at the lower-division level.

Students are encouraged to take at least one of the following courses as a college breadth requirement or as an elective: WRIT 017A-WRIT 017B-WRIT 017C, CLA 027A-CLA 027B, CLA 040, ETST 183, ETST 114, ETST 120, ETST 124, ETST 138, ETST 170/WRIT 170; or any literature course in a language other than English. Students are also encouraged to take a course in British or American history, such as HIST 017A-HIST 017B, HISE 150, HISE 151, HISE 152.

Each student is assigned a faculty advisor for help in shaping a program and following it through to graduation. Students are expected to see their advisors on a regular basis, normally once per quarter prior to registration. Information about advisors is available in the Department Office from the Undergraduate Student Affairs Assistant.

Minor
The English minor is designed to provide a good view of the whole field of English and American Literature, an opportunity for the exercise of disciplined literary analysis, and a varied experience of the best literature in English. At both levels, the student is free to choose areas of particular interest, and yet is guaranteed something of an overview.

1. Lower-division requirements: (12 units)
   a) One course to be chosen from among ENGL 023A-ENGL 023B-ENGL 023C, ENGL 031, or ENGL 032
   b) Two courses to be chosen from among ENGL 012A-ENGL 012B-ENGL 012C, ENGL 012 (E-Z), ENGL 014, ENGL 015, or ENGL 017

2. Upper-division requirements: (16 units)
   a) Four courses of upper-division English. Only four (4) units from ENGL 103 or ENGL 190 will be accepted toward fulfillment of this requirement. Proposals for ENGL 190 must be approved by a sponsoring faculty member and the Department Chair. If the student wishes to offer units from ENGL 190 as part of the 16 units, a copy of the approved petition will be placed in the student's file.

   See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

   Subject A Requirement
   For regulations governing the Subject A requirement, see Subject A under Requirements for the Bachelor's Degree in the Undergraduate Studies Section of this catalog. Students who have fulfilled the Subject A requirement may enroll in ENGL 001A. Students who are held for the requirement must take the Diagnostic Essay Examination, the results of which indicate whether they should enroll in ENGL 001A, BS/1 W 003, or a qualifier course. For information about qualifier courses, which offer eligible students instruction designed to help them fulfill the Subject A requirement, students may contact the English Department.

   Credential Waiver
   Students interested in becoming teachers at the primary or secondary school level may combine the English major with a program of study leading to the Multiple Subjects (Primary) Credential Waiver or to the Single Subject (Secondary) Credential Waiver. Specific details and counseling are available at the English Department and at the Graduate School of Education.

   Education Abroad Program
   The English Department encourages eligible students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units toward graduation. Because strategy in choosing courses to be taken here and courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult the department Student Affairs Assistant for assistance. For further details, see Education Abroad Program under International Services Center in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

   GRADUATE PROGRAM
   All domestic and international applicants for graduate status must supply Graduate Record Examination scores for the general tests (quantitative and verbal) and for the Subject Test in English (taken within the past five years) prior to their admission.

   Master's Degree
   The Master of Arts program is designed to encourage a broad familiarity with several fields of historical, theoretical, and genre-centered research within the discipline of English studies. For the students who intend to go on for the Ph.D., such familiarity enables them to select the fields that will be the focus of a more specialized doctoral project. The M.A. candidate is also required to demonstrate a reading knowledge of a foreign language. Such knowledge should make possible the development of an international dimension to the understanding of historical, theoretical, and genre-centered research.

   The candidate for the master's degree must take a minimum of 42 units of course work, including ENGL 200 (Introduction to Graduate Study in English), ENGL 296 (Master's Portfolio), and at least 32 units in other 200-series courses, excluding ENGL 280, ENGL 290, ENGL 291, ENGL 292, and ENGL 299.

   Eight (8) units of 100-series courses (excluding ENGL 103 and ENGL 190) may be counted toward the degree. Each student's specific program is individually structured in consultation with the Graduate Advisor.

   The Department offers only a Plan II master's degree. To complete work for the degree, each student must pass with a grade of "B" or better 42 units of course work (as described above). In the sixth quarter of the program, the student will submit a portfolio of three essays, one of which has been revised according to the terms of ENGL 296, and a 750-1000 word metacommentary explaining the aims and achievements of the essays. The student is then examined orally for one hour on the material in the portfolio. Following this examination, the Graduate Committee, after the evaluation of the entire student file, determines which
of the master's degree recipients may continue into the Department's Ph.D. program.

**Doctoral Degree**

Admission to the Ph.D. program is open to holders of the UCR M.A. who have been recommended to go on and to qualified candidates with a master's degree, preferably in English, from other institutions. Students entering from other institutions should at the first opportunity demonstrate proficiency in one foreign language or prove equivalent course work. Before advancement to candidacy, all students in the doctoral program must demonstrate a reading ability in a second foreign language. In lieu of a second foreign language for the Ph.D., students may complete any one of three alternatives involving the first foreign language or a related field approved by the Graduate Committee. For details, consult the Graduate Advisor or the departmental Graduate Brochure.

The aim of the doctoral program is to encourage advanced students to become informed teachers and scholar-critics capable of significant original literary scholarship.

To fulfill requirements for the Ph.D., the student, in consultation with the Graduate Advisor, selects two of the seminar fields and a correlated area of study or simply three fields, with these emphases in mind, the student maps a course of intensive study through at least 36 units of 200-series courses, excluding ENGL 280, ENGL 291, ENGL 292, and ENGL 299, leading toward a qualifying examination and a dissertation. Up to 4 units of ENGL 290 may be counted towards the 36 graduation units. The dissertation should be related to the individualized course of study preceding it and should draw out the best research and critical talents of the candidate. A final oral defense of the dissertation completes the degree requirements. The normative time to the Ph.D. degree, including M.A. work at UCR, is 18 quarters.

For a more detailed description of the requirements for the M.A. or the Ph.D., write to the Administrative Assistant, Graduate Studies, Department of English.

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**ENGLISH**

**LOWER-DIVISION COURSES**

**BSWT 001. Basic Writing. (0)**
Lecture, three hours; discussion, one hour. An introductory course designed to develop writing proficiency by means of regular written assignments and intensive individual interaction between student and instructor.

**BSWT 002A-BSWT 002B. Basic Writing. (0-0)**
Lecture, three hours; discussion, one hour. This course is the same as BSWT 001, but it is extended over two quarters. It is intended for those students who require more extensive work in developing writing skills. A grade notation “In Progress” or a letter grade of “C” or better will be given after the BSWT 002A segment; a letter grade will be given after the BSWT 002B segment. To satisfy the Subject A graduation requirement, a letter grade of “C” or better must be received either for BSWT 002A alone or for the BSWT 002A-BSWT 002B sequence. Students receiving a final grade of “C” or below may repeat the course. Satisfactory/No Credit grading is not available. Carries workload credit equivalent to 4 units but does not count towards graduation units.

**BSWT 003. Basic Writing. (0)**
Lecture, three hours; workshop, two hours. Prerequisite(s): consent of the Director of Basic Writing; concurrent enrollment in BSWT 003D. For students in need of second-language instruction in English in lieu of ENGL 001B or BSWT 002A-BSWT 002B. Carries workload credit equivalent to 5 units but does not count towards graduation units.

**BSWT 003D. Basic Writing. (0)**
Discussion, one hour. Prerequisite(s): consent of the Director of Basic Writing; concurrent enrollment in BSWT 003. Provides preparation for the Subject A examination given at the end of the quarter. Focuses on reading closely, honing syntax, organizing essays, asking and answering academic questions. Carries workload credit equivalent to 1 unit but does not count towards graduation units.

**ENGL 001A. Beginning Composition. (4)**
Lecture, three hours; three extra writing and rewriting. Prerequisite(s): fulfillment of the Subject A requirement. This course introduces students to the strategies of personal writing in a multicultural context. Note: ENGL 001B is not ordinarily offered in the fall quarter, and ENGL 001C is not ordinarily offered in the winter quarter. Students with a compelling need, however, may petition the English Department to enroll in special sections of ENGL 001B in the fall and ENGL 001C in the winter.

**ENGL 001B. Intermediate Composition. (4)**
Lecture, three hours; three extra writing and rewriting. Prerequisite(s): ENGL 001A. This course will emphasize the transition from personal to public writing in a multicultural context.

**ENGL 001C. Applied Intermediate Composition. (4)**
Lecture, three hours; three extra writing and rewriting. Prerequisite(s): ENGL 001B. This course will address the function of writing in a range of contemporary situations, including that of the academy, from a critical and theoretical perspective. Credit is awarded for only one of ENGL 001C, ENGL 01HC, or ENGL 01SC.

**ENGL 01HC. Honors Applied Intermediate Composition. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): ENGL 001B or its equivalent, admission to the University Honors Program or consent of instructor. Honors course corresponding to ENGL 001C and ENGL 01SC. A course in extended expository prose with emphasis on principles of explanation, interpretation, and argument. Special attention will be paid to the theoretical implications of various modes of academic inquiry. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENGL 001C, ENGL 01HC, or ENGL 01SC.

**ENGL 015C. Applied Intermediate Composition for Science and Engineering Majors. (4)**
Usually Spring
Lecture, three hours; extra reading and writing, three hours. Prerequisite(s): ENGL 001B. A course for science and engineering majors corresponding to ENGL 001C and ENGL 01HC. Designed to help students build the writing skills most relevant to their future work in science or engineering fields. Credit is awarded for only one of ENGL 001C, ENGL 01HC, or ENGL 01SC.

**ENGL 004A-ENGL 004B. English Writing. (4-4) F,W,S**
Lecture, three hours; extra reading and writing, three hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Provides preparation for the Subject A Examination given at the end of each quarter. Students may take ENGL 004A or ENGL 004B. Subject A students permitted to take these courses must enroll concurrently in ENGL 004D. Introduces students to academic discourse in the liberal arts. Especially valuable for freshmen who are bilingual students interested in ground rules of academic inquiry and exchange in English writing that might not be commonplace consideration in their first languages. Students taking these courses who are held for the Subject A requirement are eligible to take the Subject A Examination at the end of each quarter. Students may take ENGL 004A or ENGL 004B. The grade for students taking ENGL 004A-ENGL 004B is deferred until completion of the sequence.

**ENGL 004D. English Writing. (4)**
Discussion, one hour. Prerequisite(s): open only to students who are enrolled in ENGL 004A or ENGL 004B and who have not met the Subject A requirement. Required of Subject A students taking ENGL 004A or ENGL 004B. Provides preparation for the Subject A Examination given at the end of the quarter. Focuses on reading closely, honing syntax, organizing essays, asking and answering academic questions. Carries workload credit equivalent to 1 unit but does not count towards graduation units. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 3 units of workload credit.

**ENGL 005. Ideas in Conflict. (4)**
Lecture, three hours; extra reading and writing, three hours. Prerequisite(s): fulfillment of the Subject A requirement or consent of the Director of Basic Writing. Subject A students permitted to take this course must enroll concurrently in ENGL 005D. Elements of academic argument in the context of major, conflicting texts. Particular attention given to identifying, analyzing, and framing debatable questions and issues, finding and developing
appropriate, persuasive arguments, and tapping the syn-
tactic resources of standard English. Extensive readings
and numerous writing assignments along with formal oral
presentations.

**ENGL 005D. Ideas in Conflict. (0)**
Discussion, one hour. Prerequisite(s): open only to stu-
dents who are enrolled in ENGL 005 and who have not
met the Subject A requirement. Required of Subject A stu-
dents taking ENGL 005. Provides preparation for the
Subject A examination given at the end of the quarter.

Focuses on reading closely, honing syntax, organizing
essays, asking and answering academic questions. Carries
workload credit equivalent to 1 unit but does not count
towards graduation units. Graded Satisfactory (S) or No
Credit (NC). Course is repeatable to a maximum of 3 units
of workload credit.

**ENGL 012 (E-Z). Introduction to Literature. (4)**
Lecture, three hours; extra reading, three hours. A study
of topics, themes, or types of literature. The texts may be
selected from any one, or from a combination, of several
periods of English and/or American Literature. Intended
primarily for non-English majors.

**ENGL 012A. Introduction to Poetry. (4)**
Lecture, three hours; extra reading, three hours. An intro-
ductive study of poems selected from various periods,
including the modern. Special attention is paid to themes,
forms, and kinds. Intended primarily for non-English
majors.

**ENGL 012B. Introduction to Fiction. (4)**
Lecture, three hours; extra reading, three hours. An intro-
ductive study of novels and short stories selected from
various periods, including the modern. Special attention is
paid to themes, forms, and kinds. Intended primarily for
non-English majors.

**ENGL 012C. Introduction to Drama. (4)**
Lecture, three hours; extra reading, three hours. An intro-
ductive study of plays selected from various periods,
including the modern. Special attention is paid to themes,
forms, kinds, and relationships of text to theatrical perfor-
mane. Intended primarily for non-English majors.

**ENGL 013A. Major American Writers. (4)**
Lecture, three hours; extra reading, three hours. Masterpieces of American literature. Focuses on classic and
contemporary works by such writers as Hawthorne,
Thoreau, Emily Dickinson, Twain, Hemingway, F Scott
Fitzgerald, Ralph Ellison, and Joyce Carol Oates. Intended
primarily for non-English majors.

**ENGL 015. Modern Literature. (4)**
Lecture, three hours; extra reading, three hours. An intro-
ductive course designed primarily for non-English
majors. Focuses on an important theme or technique in
modern and contemporary literature.

**ENGL 017. Shakespeare. (4)**
Lecture, three hours; consultation/discussion, one hour.
This course, intended primarily for non-English majors, is
designed to provide an understanding of drama as a form
of literary art and to encourage a familiarity with Shake-
peare's most important works. Plays from each dramatic
genre (comedy, history and tragedy) will be included.

**ENGL 018. Shakespeare on Film. (4)**
Lecture, three hours; screening, three hours. Prerequisite(s): none. An examination of cinematic adap-
tations of Shakespeare's plays, paying particular attention
to issues of cinematic theory, historical adaption, and the-
matical non-realist strategy. Credit is awarded for only one of
ENGL 018 or THEA 021.

**ENGL 021. Culture Clash: Studies in Latino Theatre and Film. (4)**
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to U.S. Latino the-
atre and film from 1965 to the present. Students read the
major works of authors and examine important films and
videos. Cross-listed with CWS 025 and THEA 021.

**ENGL 023A-ENGL 023B-ENGL 023C .
English Literary Traditions. (4-4-4)**
Lecture, three hours; extra reading, three hours. Readings
in English literature with attention to historical and cultur-
al contexts. 023A: English Literature through the Early
Seventeenth Century; 023B: English Literature from the
Early Seventeenth Century to the Late Eighteenth Century;
023C: Nineteenth-Century English Literature.

**ENGL 031. American Literary Traditions. (4)**
Lecture, three hours; extra reading, three hours. Readings
in American literature to 1900, with attention to historical
and cultural contexts.

**ENGL 032. Twentieth-Century Literature. (4)**
Lecture, three hours; extra reading, three hours. Readings
in twentieth-century literature in English, with attention to
historical and cultural contexts.

**ENGLISH DEPARTMENT**

**UPPER-DIVISION COURSES**

**ENGL 100 (E-Z). Scriptures, Myths, and Interpretation. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division
English course (other than composition) or consent of
instructor. A study of the perspectives, powers, and
potentials of scriptural and mythical analysis. Possible areas covered include: the impact of scripture and myth on literature written in
English; the textual development of the Hebrew Scripture and its analogues, including the development of the King
James version; major authors' uses of scripture and myth; the history of scriptural and mythological exegesis; the
place of scripture and myth in current criticism and theo-
ry. Course is repeatable as topics change.

**ENGL 101. Critical Theory. (4)**
Lecture, three hours; consultation, one hour. A study of
major theoretical issues in representative critical and
scholarly works.

**ENGL 102. Introduction to Critical Methods. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): a major in English or consent of instruc-
tor. Close analysis of formal features of several genres and
an introduction to theoretical and critical approaches.

**ENGL 103. Advanced Composition. (4)**
Lecture, three hours; discussion/consultation, one hour. Prerequisite(s): ENGL 001C or the equivalent. Principles
of expository prose, with intensive practice. Advanced
course in composition, not remedial. May be repeated for
credit up to a maximum of 12 units.

**ENGL 112. History of the English Language. (4)**
Lecture, three hours; consultation/discussion, one hour.
An introductory survey of the history of English, including
its Indo-European ancestry, its vocabulary and etymolo-
gies, changes in pronunciation, spelling, and grammar,
development of dictionaries, and changing attitudes
toward the language and usage.

**ENGL 117A-ENGL 117B-ENGL 117C.
Shakespeare. (4-4-4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of
instructor. A close analytical study of plays selected from
one of Shakespeare's dramatic genres as they are design-
ged in the First Folio. 117A: History; 117B: Comedy;
117C: Tragedy.

**ENGL 121 (E-Z). Postcolonial Literatures of Asia, Africa, and the Caribbean. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division
English course (other than composition) or consent of
instructor. The analysis of colonial discourse and of the
postcolonial condition. The following topics, among oth-
ers, may be addressed: historiography and subalternity;
nationalism, gender, and sexuality; neocolonialism and
transnationality; theorizing resistance; postcolonial identity
politics and the discourses of tradition and modernity;
the postcolonial intellectual; and postcolonial filmmaking
and Third Cinema.

**ENGL 122. Literature and Sexualities. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division
English course (other than composition) or consent of
instructor. A study of English and American literature from
the perspective of sexuality and sexual identity. This
course covers such issues as gay and lesbian texts and
contexts; sexual ideologies and literature; marginalized
writers and texts; and the uses of theories of sexualities in
the study of literature.

**ENGL 123A-ENGL 123B.
Women and Literature. (4-4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of
instructor. Study of writing by women from the medieval
period to the present, examining the effects of race and
class as well as gender on literary form and language, and
considering questions of literary influence and transmis-

**ENGL 124A-ENGL 124B.
Female Novelistic Traditions. (4-4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division
English course (other than composition) or consent of
instructor. A study of the works of women novelists, writ-
ing at different historical moments and in different cultur-
al milieus. Attention is given to the psychological, political,
and technical features of the tradition; the connections
and contrasts within it; and the problematic of female lit-
ary influence. ENGL 124A: The Eighteenth and
Nineteenth Centuries; ENGL 124B: The Twentieth Century.

**ENGL 125A-ENGL 125B-ENGL 125C.
The Development of the English Novel. (4-4-4)**
Lecture, three hours; extra reading, three hours. Prereq-
usite(s): upper-division standing or consent of instructor.
A critical study of British fiction from the eighteenth
century to the present, with some attention to the criticism
and theory of the novel. 125A: The Eighteenth Century;
125B: The Nineteenth Century; 125C: The Twentieth
Century.

**ENGL 126A-ENGL 126B.
The American Novel. (4-4)**
Lecture, three hours; extra reading, three hours. Prereq-
usite(s): upper-division standing or consent of instructor.
A critical study of American long fiction, with special
attention to such modes as romance, realism, naturalism,
modernism, and postmodernism. 126A: The Nineteenth
ENGL 127A-ENGL 127B. American Poetry. (4-4)

ENGL 128 (E-Z). Major Authors. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A critical study of a major English or American author, chosen by the instructor. Examples include Shakespeare, Nathaniel Hawthorne, Charles Dickens, and Robert Frost. May 1900.

ENGL 129A-ENGL 129B-ENGL 129C. English and American Drama. (4-4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of English and American drama, including Shakespeare, Ben Jonson, and Arthur Miller. May 1900.

ENGL 130. American Literature, 1620-1830. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ENGL 031 or consent of instructor. Examination of writing in America of the pre-colonial, colonial, and early national periods, including the work of such writers as Anne Bradstreet, Benjamin Franklin, Susanna Rowson, and Washington Irving.

ENGL 131. American Literature, 1830 to the Civil War. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ENGL 031 or consent of instructor. A study of the American literary consciousness as represented in such writers as Emerson, Hawthorne, Poe, Melville, Stowe, Thoreau, Douglass, and Whitman.

ENGL 132. American Literature from the Civil War to 1914. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ENGL 031 or consent of instructor. New departures in the American literary consciousness as registered in the works of such writers as Emily Dickinson, Mark Twain, Charles W. Chesnutt, Kate Chopin, Henry James, Henry Adams, and Edith Wharton.

ENGL 133. American Literature, 1914-1945. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ENGL 032 or consent of instructor. Modern perspectives and literary innovations in the work of such writers as William Faulkner, F. Scott Fitzgerald, Zora Neale Hurston, Wallace Stevens, William Carlos Williams, Gertrude Stein, and Eugene O'Neill.

ENGL 134. American Literature, 1945 to the Present. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ENGL 032 or consent of instructor. A study of postmodern, contemporary, and multicultural texts by such writers as Toni Morrison, Thomas Pynchon, Maxine Hong Kingston, Robert Lowell, Sylvia Plath, John Ashbery, and Leslie Marmon Silko.

ENGL 135. Modern Irish Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A critical study of modern Irish literature, set against the background of the political and religious conflicts of Irish history.

ENGL 136. Latin and Latino Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical survey of U.S. Latin/o literature, with particular attention to aesthetic achievements, recurrent forms and themes, and interrelations with other American literatures.

ENGL 136T. Studies in Latina and Latino Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A focused study of ideas, forms, or movements in Latin/o literature such as autobiography, growing-up narratives, popular discourses (teatro, the corrido, social movement poetry), and the mainstream Latin/o literary "boom."* ENGL 138A-ENGL 138B. African American Literature. (4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical survey of African American literature with particular attention to the development of an African American literary tradition and the challenge posed to the traditional canon of American literature. 138A: Through the Harlem Renaissance; 138B: Since the Harlem Renaissance.

ENGL 138T. Studies in African American Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ENGL 031 or consent of instructor. Intensive study of a major author not covered under ENGL 128 (E-Z). Some segments of this course may be drawn from any historical field.

ENGL 139. Asian American Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of Asian American literature, with particular attention to aesthetic achievements, recurrent forms and themes, and interrelations with other American literatures.

ENGL 139T. Studies in Asian American Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A focused study of a genre, motif, or topic in Asian American literature such as poetry; autobiography; women's writing, nationalism, mobility narratives, gender, and sexuality.

ENGL 140 (E-Z). Studies in Literary Genres. (4)
Lecture, three hours; consultation or discussion, one hour. Prerequisite(s): none. Practical and theoretical study of such literary genres as the lyric, the epic, the romance, tragedy, comedy, and satire.

ENGL 141 (E-Z). Literature and Related Fields. (4)
Lecture, three hours; consultation or discussion, one hour. Prerequisite(s): none. A critical survey of the study of literature in relation to other fields: literature and creativity, literature and myth, literature and iconography, literature and society, literature and science, literature and behavior, literature and translation.

ENGL 142 (E-Z). Cultural Studies. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. The formal, historical, and theoretical analysis of culture in its broadest sense, including popular literature, the mass media, and/or the interplay between "low" and "high" or peasant and elite cultural forms. Topics may be drawn from any historical field.

ENGL 143 (E-Z). Gender, Sexuality, and Visual Cultures. (4)
Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive formal, historical, and theoretical analysis of gender and sexuality in film, television, and visual culture. Weekly screenings and readings. E. Feminist Film Theory and Practice: F. Film and Gender; G. Screening the Lesbian. Cross-listed with FVC 143 (E-Z).

ENGL 144 (E-Z). Race, Ethnicity, and Visual Culture. (4)
Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive formal, historical, and theoretical analysis of race and ethnicity in film, television, and visual culture. Weekly screenings and readings. I. Racial Difference and Visual Culture in the Post-Colonial World Context; J. Film, Race, and Ideology: The Case of the Vietnam War; K. Decolonizing the Screen. Cross-listed with FVC 144 (E-Z).

ENGL 145 (E-Z). Special Topics in Film and Visual Culture. (4)
Lecture, three hours; consultation/discussion, one hour. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Intensive study of a major work from the English or American literary tradition, affording an opportunity for thorough explication of the work, exploration of historical backgrounds, and relevant critical approaches.

ENGL 148 (E-Z). Studies in Major Authors. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Intensive study of a major author not covered under ENGL 128 (E-Z). Some segments of this course may be drawn from any historical field.

ENGL 149. Old English Literature. (4)
Lecture, three hours; outside reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A critical study of major authors. May 1900.

ENGL 151A-ENGL 151B. Middle English Literature. (4-4)
Lecture, three hours; outside reading, three hours. Study of major works, 1066-1500. ENGL 151A: An introduction to major literary genres—romance, dream vision, lyric, devotional prose, drama; ENGL 151B. The great works of
ENGL 151T. Studies in Medieval Literature. (4)
Lecture, three hours; consultation or discussion, one hour. English literature of the Middle Ages, with attention (where pertinent) to its continental backgrounds (the latter read in translation). Detailed examination of major literary works chosen to illuminate such topics as Christian theology, monasticism, chivalry, and courtly love.

ENGL 152. Renaissance Revolutions. (4)
Lecture, three hours; outside reading, three hours. Studies in some of the major ideas and movements of the English Renaissance (1500-1600), such as Christian humanism, neo-Platonism, syncretism, puritanism, rational theology, science, republicanism, centering on such figures as More, Elyot, Castiglione, Ascham, Sidney, Jonson, Bacon, Hobbes, and Milton.

ENGL 153. Studies in Early Renaissance Literature. (4)
Lecture, three hours; outside reading, three hours. Studies in some of the major literary works of the period (excluding The Faerie Queene). Topics may center on comparisons with other art forms, on genres like the lyric, the pastoral, the romance, etc., or on ideas or topics of importance as they are reflected in the literary forms of the period.

ENGL 154. Studies in Late Renaissance Literature. (4)
Lecture, three hours; outside reading, three hours. Studies of some of the major literary figures of the period (excluding Milton). Topics may center on major late English renaissance ideas or themes such as the political, philosophical, or religious questions, or on other ideas or topics of importance as they are reflected in the literary forms of the period (metaphysical or Cavalier poetry, the character, etc.).

ENGL 161A-ENGL 161B. Restoration and Eighteenth-Century Literature. (4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. ENGL 161A: English literature from 1660-1730, with particular emphasis on the works of Pope, Dryden, Voltaire, Swift, and Defoe. ENGL 161B: English literature from 1730-1800, with particular emphasis on the poets of the eighteenth century such as Swinburne, Wordsworth, and Coleridge.

ENGL 161C. Later Romantic and Victorian Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Studies in the later fourteenth century—Chaucer’s Troilus, Peers Plowman, and the poems of the Gawain poet. ENGL 166A: Writers such as Byron, Hazlitt, Keats, Scott, Mary Shelley, and Percy Shelley.

ENGL 166T. Studies in English Romanticism. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. A study of the relationship between the literature of the period and intellectual interests such as antiquarianism, primitivism, perfectionism, transcendentalism, and romanticism.

ENGL 172A-ENGL 172B. Literature of the Victorian Period. (4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. ENGL 172A: Earlier Victorian poetry and prose, chiefly Tennyson, Browning, Carlyle, Mill, and Newman. ENGL 172B: Later Victorian poetry and prose: Arnold, Ruskin, Swinburne, Pater, and Hopkins; the Pre-Raphaelites, the Aesthetic Movement, and Decadence.

ENGL 172T. Studies in Victorian Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Studies in Victorian literature and its legacy in modern critical configurations of romanticism. Course is repeatable as content changes.

ENGL 176A-ENGL 176B. Twentieth-Century British and American Literature. (4-4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or lower-division English course (other than composition) or consent of instructor. Study of representative literary works: fiction, non-fiction, poetry, and drama. ENGL 176A: 1900 to the late 1920s; ENGL 176B: the late 1920s to about 1950; ENGL 176C: about 1950 to the present.

ENGL 176T. Studies in Twentieth-Century British and American Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ENGL 176A or consent of instructor. An examination of significant twentieth-century authors and their aesthetic, intellectual, political, and cultural contexts.

ENGL 190. Special Studies. (1-5)
To be taken with the consent of the Chair of the department as a means of meeting special curricular problems.

GRADUATE COURSES

ENGL 200. Introduction to Graduate Study in English. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. A team-taught introduction to a range of critical and theoretical approaches important to the field. May be repeated as content changes.

ENGL 260. Seminar in Medieval Literature. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Study of representative literary works: fiction, poetry, and drama; thematic topics, including gender, literacy, or subjectivity; methodology including textual study, historical, or literary theory. Course is repeatable as content changes.

ENGL 262. Seminar in Renaissance Literature. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Studies in Renaissance literature and its literary culture, or historical contexts. Intensive readings in a major author; historical subperiod, or special topic. Includes critical and theoretical approaches important to the field. Course is repeatable as content changes.

ENGL 264. Seminar in Restoration and Eighteenth-Century Literature. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Intensive research in particular areas of Restoration and eighteenth-century literature and society such as the “rise” of the novel; women writers and readers; interpretations of “high” and “low” cultures; ideologies of gender and sexuality; capitalism, colonialism, and literature; autobiographical and historical representations of self and others. Course is repeatable as content changes.

ENGL 265. Seminar in Romantic Literature. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Research in late eighteenth- and early nineteenth-century literature and its legacy in modern critical configurations of romanticism. Course is repeatable as content changes.

ENGL 267. Seminar in Victorian Literature. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Concentrated research and discussion of topics, issues, and figures in Victorian literature and culture. Rubrics may include, but are not limited to, theoretical approaches to Victorian studies; questions of race, class, gender, and sexuality in Victorian culture; problems of aesthetics and genre; the politics of Empire; as well as author or text focused offerings. Course is repeatable as content changes.

ENGL 268. Seminar in Twentieth-Century British Literature. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Intensive analysis of genres, forms, movements, and issues in twentieth-century British literature and culture. May include topics such as Bloomsbury and the Politics of art, Joyce and Empire, Modernism, Modernity, and Gay Identities; British Postmodernism; Virginia Woolf and Feminist Theory. Course is repeatable as content changes.

ENGL 269. Seminar in American Literature to 1900. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Intensive research in American literature and culture to 1900. Topics may include nineteenth-century novel; slavery and narrative; gender and colonial literary culture; Whitman and Dickinson; or other historical, gender-centered or theoretical issues. Course is repeatable as content changes.

ENGL 270. Seminar in Twentieth-Century American Literature. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Study of representative literary texts and of current theories about the field. May focus on such topics as Modernism, Postmodernism, regionalism, alternative
cannons, interrelations among texts, and connections between texts and cultures. Course is repeatable as content changes.

ENGL 272. Seminar in Critical Theory. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Studies in theoretical movements. May emphasize historical or thematic relations among various theoreticians. Course is repeatable as content changes.

ENGL 273. Seminar in Cultural Studies. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Intensive formal, historical, and theoretical research into the history and theory of culture in its broadest sense: popular literature, the mass media, and the interplay between popular and elite or "low" and "high" cultural forms. Course is repeatable as content changes.

ENGL 274. Seminar in Feminist Discourses. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Focuses on theories and histories of gender and sexuality and analyzes the effects, in literary and other discourses, of foregrounding these categories. May involve special emphasis on "women" as writers and theorists and/or feminist issues. Course is repeatable as content changes.

ENGL 275. Seminar in Film and Visual Cultures. (4)
Seminar; three hours; screening, three hours.
Prerequisite(s): graduate standing or consent of instructor. Analysis of film, television, and other forms of visually-oriented textuality. Approaches may include cultural criticism; media theory; structural and poststructural analysis; feminist, gender, and gay and lesbian theory; semiotics. Course is repeatable as content changes.

ENGL 276. Seminar in Colonialism and Postcoloniality. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. An introduction to the analysis of colonial discourse and the postcolonial condition. Issues addressed include, among others: historiography and subalternity; nationalism, gender, and sexuality; decolonization and transnationality; theorizing resistance; mimicry in colonial discourse; the academy, pedagogy, and the postcolonial intellectual. Course is repeatable as content changes.

ENGL 277. Seminar in Lesbian and Gay Studies. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Examines issues in literature, theoretical, and cultural representations by and of lesbians, gay men, and other sexually marginalized groups. Topics may include the history of sexuality; identity politics; passing and mimicry; and lesbian and gay literature. Course is repeatable as content changes.

ENGL 278. Seminar in Minority Discourse. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Intensive study and research in cultural traditions formerly excluded from literary history such as African American, Asian American, Chicano, and Native American. Cross-cultural studies of representations of such marginalized groups. Topics may include the African American novel; border culture; nineteenth-century Black bodies; oral history and literature. Course is repeatable as content changes.

ENGL 279. Seminar in Rhetorical Studies. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Intensive study and research in rhetoric or composition theory. Topics may include the rhetorical dimensions of literature, literary theory and civic discourse; the ethics or history of rhetoric; competing conceptions of the writing process; and the relations between rhetorical, literary, and cultural criticisms. Course is repeatable as content changes.

ENGL 280. Colloquium in English and American Literature. (2)
Prerequisite(s): graduate standing. Colloquia of both a formal and informal order on current research topics for students, faculty, and visiting scholars. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENGL 281. Seminar in Comparative Studies. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Intensive study of two or more ostensibly distinct fields, periods, disciplines, or arts. Course is repeatable as content changes.

ENGL 282. Seminar in Bibliography and Textual Criticism. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Advanced research in the history of the book and textual production, including such topics as analytical bibliography, editorial theory and practice, and the economics of textual dissemination. Course is repeatable as content changes.

ENGL 289. Seminar in Genres. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Examines individual literary genres (poetry, the novel, drama, etc.) and subgenres (epic, romance, lyric, comedy, etc.) in terms of current or historical genre theories. Course is repeatable as content changes.

ENGL 290. Directed Studies. (1-4)
Discussion, one hour; practicum, one to two hours.
Prerequisite(s): graduate standing or consent of instructor. Advanced research in the history of the book and textual production, including such topics as analytical bibliography, editorial theory and practice, and the economics of textual dissemination. Course is repeatable as content changes.

ENGL 291. Individual Study in Coordinated Areas. (1-12)
Outside research, variable. A program of study designed to advise and assist candidates who are preparing for examinations. Repeatable under the following rules: (1) a student may take up to 12 units prior to the award of the M.A.; (2) a student may take up to 24 additional units after award of the M.A. but prior to successful completion of the Ph.D. qualifying examination. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENGL 292. Concurrent Analytical Studies. (1-4)
Prerequisite(s): instructor approval, or approval of instructor in the field under whom the work will be carried out. Each 292 course will be taken concurrently with some 100 series course but on an individual basis. It will be devoted to research, criticism, and written work of a graduate order commensurate in amount with the number of units elected. ENGL 101 and ENGL 103 may not be used for this arrangement. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENGL 296. Master's Portfolio. (2)
Outside research, six hours; consultation, two to three hours.
Prerequisite(s): completion of five quarters of master’s study in English; consent of the Graduate Advisor. Students revise, extend, and develop essays written during their master’s program in preparation for the master’s portfolio examination. Graded Satisfactory (S) or No Credit (NC).

ENGL 299. Research for Thesis or Dissertation. (1-12)
Prerequisite(s): Satisfactory completion of the Ph.D. Qualifying Examination. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENGL 301. Introduction to the Teaching of English. (1)
Individual and group conferences, one hour.
Prerequisite(s): graduate standing. A flexible program of meetings and workshops specifically devoted to orienting apprentices and transfer TAs to the writing program at UC Riverside. Concentrates on the problems of organizing and teaching ENGL 001A, ENGL 001B, ENGL 001C or its equivalent. Required of all apprentices and transfer TAs. Students must enroll concurrently in ENGL 302. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit for a maximum of 2 units.

ENGL 302. Teaching Practicum. (1-4)
Seminar, one to four hours.
Prerequisite(s): graduate standing. A flexible program of meetings and conferences on the problems and techniques of writing instruction most pertinent to Basic Writing or to ENGL 001. Required of all TAs for at least five quarters, after which the TA may, with the permission of the Director of ENGL 001, elect to take ENGL 304 instead. Open to all graduate students. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENGL 303. Advanced Teaching Practicum. (1-2)
Discussion, one hour; practicum, one to two hours.
Prerequisite(s): graduate standing or consent of instructor. A flexible program of meetings and conferences on the problems and techniques of teaching literature, cultural studies, film studies, and related courses. Graded Satisfactory (S) or No Credit (NC). Course is repeatable as content changes.

ENGL 304. Professional Research Preparations. (2)
Individual and group conferences, two hours.
Prerequisite(s): consent of instructor. Procedures, preparation, and presentation of oral and written research materials to scholarly journals, presses, and audiences. Periodical and conference requirements. Grant proposals, including research plans, budgets, and support sources. Adaptation of such techniques to alternative careers. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENGL 380. The Teaching of Written Composition. (4)
Seminar, eight hours.
Prerequisite(s): consent of instructor; participation in the Inland Area Writing Project Summer Workshop. A study of research and practice in the teaching of written composition in the elementary and secondary schools. Students may receive either a letter grade or Satisfactory (S) or No Credit (NC) grade. See instructor for grading basis; no petition is required.
MAJOR
The Department of Entomology offers undergraduate programs leading to either the Bachelor of Science or the Bachelor of Arts degree. The B.S. degree offers students with a strong interest in the natural sciences an opportunity to emphasize this aspect of their education. The B.A. degree is available to students who wish to obtain a broader background in the humanities and social sciences than is required of students in the B.S. program.

Counseling and information on the program and course requirements is provided by the departmental Undergraduate Advisor, Dr. Thomas M. Perring. 107 Entomology Annex I.

Sample Program

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The Department of Entomology also participates in the Biological Sciences major. See the Biological Sciences listing in this catalog for information about its Entomology track.

Minor

The Department of Entomology offers a minor in Entomology designed to allow the student the freedom to pursue areas of particular interest.

The minor consists of no less than 20 and no more than 28 units of Entomology courses to be selected as follows:

1. ENTM 100/BIOL 100

2. Select from the following upper-division Entomology courses to complete unit requirement: ENTM 109, ENTM 112/BIOL 112/BPSC 112, ENTM 114, ENTM 124, ENTM 126, ENTM 126L, ENTM 127/BIOL 127, ENTM 128, ENTM 129, ENTM 129L, ENTM 132, ENTM 133, ENTM 162/BIOL 162, ENTM 173/BIOL 173, ENTM 190, ENTM 197, ENTM 199H

3. No more than 4 units of ENTM 190, ENTM 197, or ENTM 199H, either solely or in combination, may be applied toward the unit requirement.

4. Students may count no more than 8 units toward both their major and minor fields of study.

See Minors Under the College of Natural and Agricultural Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

GRADUATE PROGRAM

The Department of Entomology offers programs leading to the M.S. (thesis plan) and Ph.D. degrees with specialization in, but not restricted to, the areas below. Fields of specialization include arthropod vectors of plant pathogens, biological control, insect behavior, insect biochemistry, insect ecology, insect physiology, molecular entomology, neurosciences, toxicology, and phytoremediation. The graduate program also involves research in endocrinology, insect-plant interactions, and biologically-based pest management, and extends into the Department of Entomology’s teaching and research laboratories. Information on participating faculty and their research specialties may be found in the listing of Department of Entomology Faculty and in the brochure Graduate Studies in Entomology. The Supplementary Information Pamphlet provides detailed information for completing the graduate program. These publications may be obtained from the Biological Sciences Graduate Student Affairs Center, 1151 Batchelor Hall, (800) 735-0717. University requirements for the M.S. and Ph.D. degrees are given in the Graduate Studies section of this catalog.

For admission to the graduate program in Entomology, students must have a bachelor’s degree with a major in Entomology, a biological science, Chemistry, Biochemistry, or a suitable equivalent. Course work is required in inorganic and organic chemistry, including laboratories, and general physics.

Additional admission requirements for M.S. and Ph.D. students consist of the equivalent of 30 quarter units of life sciences other than entomology, including one course in general biology and genetics. A course in biochemistry may serve as an elective in the life sciences. Students specializing in insect biochemistry, insect physiology, molecular entomology, neurosciences, or toxicology may substitute courses in organic, physical, and biological chemistry; toxicology; and pharmacology for courses in life sciences except for the equivalent of a one-year introductory course in general biology.

The normative time to the M.S. degree is 6 quarters and to the Ph.D. degree is 17 quarters. The Department of Entomology requires Graduate Record Examination (GRE) (verbal, quantitative, and analytical) test scores. This requirement applies only to United States citizens and to international applicants residing in the United States at the time of application. The Department recommends that international students residing outside of the United States at the time of application also submit GRE scores.

International students, permanent residents, and even United States citizens whose native language is not English and who do not have a bachelor’s or postgraduate degree from an institution where English is the exclusive language of instruction will be required to complete the Test of English as a Foreign Language (TOEFL). A minimum score of 550 is required on the paper-based exam. A minimum score for the computer-based exam is 213.

Opportunities for Interdisciplinary Graduate Study

Faculty from the Department of Entomology also participate in unique graduate specializations in Cell, Molecular, and Developmental Biology; Cell Biology and Neurosciences; Environmental Toxicology; Evolution and Ecology; and Genetics, which draw on the strengths of distinguished scientists from several units. For further information concerning work in these areas, see the respective program descriptions in the Curricula and Courses section of this catalog or contact the Biological Sciences Graduate Student Affairs Center, at (800) 735-0717.

LOWER-DIVISION COURSES

ENTM 010. Natural History of Insects. (4) F,W,S

Lecture, three hours; demonstration, one hour. A study of the fascinating world of insects and of their impact on man; designed for non-entomology majors. Living and preserved insects and many other visual aids are used. Federici, Gonzalez, Luck, Morse, Mullens, Painel, Redak, Rust, Trumble

ENTM 020. Bees and Beekeeping. (4) F, Odd Years

Lecture, three hours; discussion, one hour. Fundamentals of keeping honey bees, their fascinating social behavior, and their economic importance as pollinators of agricultural crops and as producers of honey and other products. Demonstrations of bee biology and behavior; with colonies of bees, and of beekeeping techniques, equipment, and extraction of honey. Visscher

UPPER-DIVISION COURSES

ENTM 100. General Entomology. (4) F

Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005B, BIOL 005C, or equivalents; or consent of instructor. Introductory study of insects, Earth’s most diverse group of animals (75 percent of animal species are insects). Lecture covers the anatomy, physiology, ecology, behavior, and diversity of insects. Laboratory focuses on insect identification. Cross-listed with BIOL 100. Walker

ENTM 109. Field Entomology. (4) S

Laboratory four hours; field, eight hours. Prerequisite(s): BIOL 100/ENTM 100 or equivalents or consent of instructor. Study and field collection of insects in selected ecological communities from the diversity of life zones comprising Southern California. Students prepare specimens collected to professional standards, identify specimens, and submit their collections for grading and incorporation into the Department of Entomology’s teaching and research collections. Goeden

ENTM 112. Systematics. (4) F

Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005C or equivalent. Principles and philosophy of classification: phylegetic and phyletic methods; species concepts, taxonomic characters, evolution, hierarchy of categories, and nomenclature. Cross-listed with BIOL 112 and BPSC 112. Heraty

ENTM 114. Aquatic Insects. (3) S, Even Years

Lecture, two hours; laboratory, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, or consent of instructor. Aquatic insects as nutrient cyclers, pollution indicators, disease vectors, and fish food. Identification of major orders and families, morphological and physiological adaptations, and life history strategies. Laboratory emphasizes identification (collection) and includes a group field ecology project and two weekend field trips. Mullens, Walton

ENTM 124. Agricultural Entomology. (4) F, Odd Years

Laboratory four hours; field, eight hours. Prerequisite(s): BIOL 100/ENTM 100 or equivalent or consent of instructor: Identification, life history, ecology, distribution, and management of key pest and beneficial species learned through field observation, discussions with industry representatives, and laboratory study. Detailed notes and collec-
tions from field trips to all major growing regions of California form the basis for laboratory discussion.

Perring

ENTM 126. Medical and Veterinary Entomology. (3) F, Even Years (2000 only)
Lecture, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C; consent of instructor. Principles of insect morphology, with emphasis on structural, household, and stored product pests. Exercises on the recognition and identification of these pests, their life histories, and strategies for their control. Rust

ENTM 162. Insect Behavior. (4) F
Lecture, four hours. Prerequisite(s): BIOL 100/ENTM 100; or BIOL 005A, BIOL 005B, and BIOL 005C; consent of instructor. An analysis of the mechanisms that cause and control behavioral reactions of insects. Emphasis on ethological and physiological knowledge concerning orientation mechanisms, communication systems, learning, and the role of the nervous system in integrating behavior in insects. Cross-listed with BIOL 162. Cardé, Visscher

ENTM 173. Insect Physiology. (4) S
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005A and BIOL 005B or equivalents; CHEM 112A-CHEM 112B or CHEM 112C or equivalents; consent of instructor. Introduction to principles of insect physiology. Subjects include growth, development and hormones, cuticle, nervous system, circulation, respiration, digestion, nutrition, excretion, reproduction, water balance, and temperature relations. Prior knowledge of insects is not assumed. Cross-listed with BIOL 173. Miller, Thompson

ENTM 190. Special Studies. (1-5) F,W,S
Prerequisite(s): consent of instructor. Directed studies in specialized fields in entomology such as insects affecting subropical fruits, deciduous fruits and nuts, foricultural crops and turf, vegetable and field crops, forest and ornamental trees and shrubs, stored products, and household pests. Course is repeatable.

ENTM 197. Research for Undergraduates. (1-4) F, W, S
Prerequisite(s): senior in entomology. The student will submit a written research report. Course is repeatable.

ENTM 199H. Senior Honors Research. (1-5) F,W,S
Laboratory, three to fifteen hours. Prerequisite(s): senior status and consent of instructor; a GPA of 3.5 or better in entomology courses and 3.2 in all University course work. Research in entomology under supervision of a faculty member in entomology. The student will submit a written report. Course is repeatable.

ENTM 204. Advanced Insect Ecology. (3) F
Lecture, three hours. Prerequisite(s): an upper-division course in population and community ecology or consent of instructor. Graduate-level introduction to principles of insect ecology, genetics, evolution, and behavior. Topics include insect population dynamics and community interactions, behavioral interactions of insects with their environment, and genetics of geographic variation and adaptation of insect populations. Harter, Millar, Visscher

ENTM 205. Insect Morphology. (3) W
Lecture, three hours. Prerequisite(s): BIOL 100/ENTM 100 or an equivalent upper-division general entomology course or consent of instructor. Principles of insect morphology, with emphasis on functional systems and morphological characters of phylogenetic importance and adaptive significance to insects; comparative anatomy of extinct and living insect groups; insect phylogenetic relationships. Pinto

ENTM 205L. Insect Taxonomy Laboratory. (2) W
Laboratory, six hours. Prerequisite(s): BIOL 100/ENTM 100 or an equivalent upper-division general entomology course, and concurrent enrollment in ENTM 205, or consent of instructor. Insect taxonomy stressing the characteristics of the major taxa and identification to the level of family. Pinto

ENTM 206. Insect Physiology and Biochemistry. (3) S
Lecture, three hours. Prerequisite(s): upper-division courses in general entomology and general biochemistry or consent of instructor. Graduate-level introduction to the physiology and biochemistry of insect systems. Topics covered include basics of growth and development, reproduction, digestion, nutrition, metabolism, respiration, circulation, ion and water balance, nervous and muscular systems, circadian rhythms. Adams, Thompson

ENTM 207. Arthropod Vectors in Relation to Plant Disease. (4) S, Even Years
Lecture, two hours; laboratory, six hours. Prerequisite(s): BIOL 100/ENTM 100, BIOL 120/MCB 120/EPHA 120, or consent of instructor. Detailed analysis of interacting mechanisms involved in the transmission of plant pathogens by arthropods. Emphasis on learning through extensive laboratory experimentation. Perring

ENTM 208. Host-Parasite Relationships. (3) F
Lecture, three hours. Prerequisite(s): consent of instructor. Explores the fundamental biochemical and developmental requirements for “successful” host-parasite relationships in insects. Emphasizes youn and nematode parasites of insects and vector-parasite interactions involved in transmission of parasites in malaria, trypanosoma, and lyme disease. Cross-listed with BIOL 208. Beckage

ENTM 209. Microtechniques in Insect Morphology. (2) W, Even Years
Laboratory, six hours. Prerequisite(s): BIOL 005A, BIOL 005B or equivalents; consent of instructor. Development of research techniques and skills used in the study of insect morphology. Covers the principles of and provides hands-on experience with the following: optical microscopy, scanning electron microscopy, whole-mount dissection techniques, morphometric measurement and analysis, scientific illustration, macrophotography, and histological techniques. Walker

ENTM 212. Ecological Systems in Space and Time. (4)
Lecture, two hours; discussion, one hour; field, thirty hours per quarter. Prerequisite(s): BIOL 117 or BIOL 152/GEOL 152 or equivalent or consent of instructor. Focuses on how ecological systems are interpreted and reconciled at the community, landscape, and paleontological scales and on the role of extrinsic factors operating at each of these scales. Examines the historical development of our understanding of ecological systems at various scales. Cross-listed with BIOL 212 and GEO 212.

ENTM 219. Theory of Systematics. (4)
Lecture, two hours; discussion, two hours. Prerequisite(s): BIOL 112/PSYC 112/ENM 112 or equiv-
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ent or consent of instructor. Examines topics developed around a series of classical and recent papers on the principles, philosophy, and methodology of modern systems and phylogenetic methods. Cross-listed with BIOL 219 and GEO 219.

ENTM 224. Advanced Economic Entomology. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): ENTM 124, BIOL 127/ENTM 127, or consent of instructor. Advanced concepts in insect-pest management and control; ecological bases for control; control by host resistance and by genetic, physical, behavioral, cultural, and chemical means; integrated systems of pest management. Paine

ENTM 226. Insect Development. (3) S, Even Years
Lecture, three hours. Prerequisite(s): consent of instructor. Examines the fundamentals of insect development, including gonadogenesis, fertilization, specification of the body plan, sex determination, larval development, metamorphosis, and formation of the adult, as well as the endocrine and neuroendocrine factors that regulate these processes. Graduate students receive letter grades; undergraduates receive Satisfactory (S) or No Credit (NC) grades. Beckage

ENTM 227. Insect Population Ecology. (3) W, Odd Years
Lecture, three hours. Prerequisite(s): BIOL 127/ENTM 127 or consent of instructor. Recommended: ENTM 129; STAT 106A; STAT 106B or equivalent. Theory of animal population regulation. Factors affecting distribution and abundance of animals with emphasis on examples from the Arthropoda. Luck

ENTM 229. Advanced Biological Control. (4) F, Alternate Years
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 127/ENTM 127, ENTM 129, or equivalents, or consent of instructor. The lecture explores theory and practices relating to the use of natural enemies in the suppression of insect, weed, pathogen, and vertebrate populations. The laboratory surveys insect and other natural enemies, their attributes, collection, cultivation, quarantine handling, and field use. Normally letter graded, but students may petition the instructor for a Satisfactory (S) or No Credit (NC) grade. Bellows

ENTM 231. Insect Pathology. (4) S, Even Years
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 100/ENTM 100, at least one course in microbiology, or consent of instructor. Consideration of the principles of general insect pathology and microbiology. Detailed study of noninfectious and infectious diseases of insects, diagnosis, epizootiology, physiology, symptomatology, and the use of microbial agents in the control of insect pests. Federici

ENTM 232. Molecular Biology of Insects. (3) S, Odd Years
Lecture, three hours. Prerequisite(s): BIOL 107A or consent of instructor. Application of molecular biology to entomology and entomological problems. Emphasizes how molecular biological tools are used to understand insect genome organization, pest resistance, transgenic insects, insect behavior, and insect systematics. Atkinson

ENTM 240. Research Methods in Insect Chemical Ecology. (4) W, Odd Years
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 127/ENTM 127 or ENTM 204 or consent of instructor. Survey of the methods used in the isolation, identification, and bioassay of biologically active natural products. Topics include bioassy design and evaluation, and microscale chemical separation and identification techniques. Letter grades are assigned to students who present a formal seminar; other students receive Satisfactory (S) or No Credit (NC) grades. Millar

ENTM 241. Insect-Plant Interactions. (4) F, Odd Years
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 127/ENTM 127 or consent of instructor. Concepts of the development and maintenance of ecological associations between plants and arthropod herbivores in ecological and evolutionary time; organization of arthropod communities on plants; phytochemical basis for the mediation of plant-arthropod associations; coevolution of plants and herbivorous insects; manipulation of plant-arthropod associations in arthropod pest management programs. Hare, Trumble

ENTM 242. Development of Hypotheses and Research Design. (3)
Lecture, one hour; discussion, one hour; written work, three hours. Prerequisite(s): graduate standing or consent of instructor. Teaches fundamentals of research topic selection, development of hypotheses, and selection of experimental designs. Students prepare full-length federal grant proposals, then review and rank them in grant panel review format. Millar, Trumble

ENTM 250. Seminar in Entomology. (1) F, W, S
Seminar, one hour. A series of lectures by visiting scientists, staff and advanced graduate students on research topics in entomology and allied fields. Graded Satisfactory (S) or No Credit (NC).

ENTM 251. Seminar in Insect-Plant Interactions. (2) W
Seminar, two hours. Prerequisite(s): ENTM 241 or consent of instructor. Rigorous examinations and interpretation of recent publications in the area of insect-plant interactions. Subject matter varies from year to year, and the course may be taken more than once for credit. Paine, Trumble, Walker

ENTM 252. Seminar in Insect Behavior. (2) S
Seminar, two hours. Prerequisite(s): BIOL 162/ENTM 162 or consent of instructor. An analysis and interpretation of published experimental data dealing with insect behavior, and an attempt to derive general principles underlying behavior. Subject matter varies from year to year, and the course may be taken more than one year for credit. Cardé, Millar, Visscher

ENTM 253. Seminar in Insect Toxicology. (1) F
Seminar, one hour. Prerequisite(s): ENTM 128 or consent of instructor. Selected topics in insect toxicology. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Gill

ENTM 254. Seminar in Biological Control. (2) F, W
Seminar, two hours. Prerequisite(s): BIOL 127/ENTM 127, ENTM 129, or consent of instructor. Concepts, questions and hypotheses in biological control. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Goeden, Bellows

ENTM 255. Seminar in Medical and Veterinary Entomology. (2) F
Seminar, two hours. Prerequisite(s): ENTM 126 or consent of instructor. Rigorous review and analysis of advanced topics in medical and veterinary entomology and related disciplines. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Mullali, Mullens, Walton

ENTM 256. Seminar in Systematic Entomology. (2) S
Seminar, two hours. Prerequisite(s): BIOL 112/BPSC 112/ENTM 112 or consent of instructor. Selected topics in insect systematics. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Heraty, Pinto

ENTM 257. Graduate Seminar in Cell, Molecular, and Developmental Biology. (1) F, W
Seminar, one hour. Prerequisite(s): graduate standing. Lectures by visiting scholars on current research in cell, molecular, and developmental biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BSCI 257, BIOL 257, BMSC 257, BPSC 257, ENTM 257, NEM 257, NRS 257, and PLPA 257. Talbot

ENTM 258. Seminar in Insect Pest Management. (2) W
Seminar, two hours. Prerequisite(s): consent of instructor. Selected topics in insect pest management. Letter grades will be assigned to students presenting formal seminars; by consent of the instructor; others will be graded Satisfactory (S) or No Credit (NC). Perring, Redak

ENTM 261. Colloquium in Recombinant DNA. (1) F, W, S
Seminar, one hour. Prerequisite(s): graduate status or consent of instructor. Oral reports by visiting scholars, faculty and students on current research topics in recombinant DNA. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 261, BIOL 261, BPSC 261, and PLPA 261.

ENTM 271. Research Seminar in Management of Vegetable Crop Pests. (1) W
Seminar, one hour. Prerequisite(s): consent of instructor. Seminar and critical discussion emphasizing current research and advances in management of vegetable crop pests. Graded Satisfactory (S) or No Credit (NC). Course may be repeated. Trumble

ENTM 272. Research Seminar in Insect Communication and Behavior. (1) F, W, S
Seminar, one hour. Prerequisite(s): consent of instructor. Seminar and critical discussion emphasizing current research and advances in insect communication and behavior. Graded Satisfactory (S) or No Credit (NC). Course may be repeated. Cardé

ENTM 275. Research Seminar in Citrus Arthropod Pest Management. (1) W
Seminar, one hour. Prerequisite(s): consent of instructor. Seminar and critical discussion emphasizing current research and advances in the management of arthropod pests of citrus and other subtropical tree crops. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 4 units. Morse

ENTM 276. Research Seminar in Medical, Urban, and Veterinary Entomology. (1) F, S
Seminar, one hour. Prerequisite(s): consent of instructor. Seminar and critical discussion emphasizing current research and advances in medical, urban, and veterinary entomology. Graded Satisfactory (S) or No Credit (NC). Course may be repeated. Mullali, Mullens, Rust, Walton

ENTM 277. Research Seminar in Insect Biochemistry and Toxicology. (1) F, W, S
Seminar, one hour. Prerequisite(s): consent of instructor. Seminar and critical discussion emphasizing current
ENMT 290. Directed Studies. (1-6) F,W,S
Literature studies on special topics under direction of a member of the staff. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENMT 291. Individual Study in Coordinated Areas. (1-6) F,W,S
Prerequisite(s): graduate standing. Faculty assisted programs of individual study for candidates who are preparing for examinations. The following rules apply: 1) Up to 6 units may be taken prior to award of the Master’s degree, such units to be in addition to minimum unit requirements for the degree; 2) Up to 12 additional units may be taken prior to advancement to candidacy for the Ph.D.; 3) The course may be repeated within these limits; 4) Grading will be Satisfactory (S) or No Credit (NC).

ENMT 297. Directed Research (1-6) F,W,S
Exploratory research toward the development of the dissertation problem or other research not specifically for thesis or dissertation. Graded Satisfactory (S) or No Credit (NC).

ENMT 299. Research for Thesis or Dissertation. (1-12) F,W,S
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

ENVIRONMENTAL ENGINEERING

Environmental Engineering

See Chemical and Environmental Engineering

ENVIRONMENTAL SCIENCES

Subject abbreviation: ENSC

Marylnn Yates, Ph.D., Chair
Walter J. Farmer, Ph.D., Vice Chair, Teaching Program
Program Office, 2207 Geology (909) 787-5103; http://envsci.ucr.edu

Professors
Janet T. Arey, Ph.D. Atmospheric Chemistry
Roger Atkinson, Ph.D. Atmospheric Chemistry
Andrew C.-S. Chang, Ph.D. Agricultural Engineering
Walter J. Farmer, Ph.D. Soil Chemistry
William T. Frankenberger, Jr., Ph.D. Soil Microbiology
Robert C. Graham, Ph.D. Soil Mineralogy
William A. Jury, Ph.D. Soil Physics
Kath C. Knapp, Ph.D. Natural Resource Economics
John Leetey, Jr., Ph.D. Soil Physics
Lanny J. Lund, Ph.D. Soil Morphology, Genesis, and Classification
Daniel Schlenk, Ph.D. Aquatic Ectotoxicology
Henry J. Vaux, Jr., Ph.D. Natural Resource Economics
Maryllyn Yates, Ph.D. Environmental Microbiology

Professors Emeriti
Glen H. Cannell, Ph.D. Soil Physics
Homer D. Chapman, Ph.D., LL.D.
Soils and Plant Nutrition
Kenneth W. Gardiner, Ph.D. (Environmental Science/Management)
James D. Oster, Ph.D. Soil Chemistry
Albert L. Page, Ph.D. Soil Chemistry
Parker E. Pratt, Ph.D. Soil Chemistry

Associate Professors
Christopher Amrine, Ph.D. Soil Chemistry
Michael A. Anderson, Ph.D. Soil Chemistry
David M. Crohn, Ph.D. BioSystems Engineering
David E. Crowley, Ph.D. Soil Plant Relations
David R. Parker, Ph.D. Soil Chemistry

Assistant Professors
Linda Fernandez, Ph.D. Resource and Environmental Economics
Thomas Meixner, Ph.D. Hydrology
Kurt A. Schwabe, Ph.D. Resource and Environmental Economics
Laosheng Wu, Ph.D. Soil Physics
Paul J. Ziemann, Ph.D. Atmospheric Science

Adjoint Professors
Andrej Bytnorwicz, Ph.D. Atmospheric/Forest Sciences
James D. Rhode, Ph.D. Soil Science
William F. Spencer, Ph.D. Soil Chemistry
Donald L. Suarez, Ph.D. Geochemistry
Martinus T. van Genuchten, Ph.D. Soil Physics
Scott R. Yates, Ph.D. Soil Physics

Adjoint Associate Professors
Francis N. Dalton, Ph.D. Soil Physics
Sabine Goldberg, Ph.D. Soil Chemistry

Lecturer
Peter H. Diage, M.A. Environmental Sciences

Cooperating Faculty
Mark R. Matsumoto, Ph.D. Chemical/Environmental Engineering
Harry W.K. Tom, Ph.D. Physics

MAJOR

The Department of Environmental Sciences offers a Bachelor of Arts and a Bachelor of Science Degree in Environmental Sciences. Students can choose to concentrate their studies in one of four options: the Natural Science option, the Social Science option, the Soil Science option, or the Environmental Toxicology option.

The necessity of maintaining an acceptable level of environmental quality is placing increasing demands upon governments, businesses, and industries locally, nationally, and worldwide. In order to help meet those demands, the Environmental Sciences Program is designed to provide training for students preparing for graduate study in environmental sciences or for students preparing for graduate study in law, research, or teaching in a capacity that utilizes a background in the science of the human environment.

The structure of the Environmental Sciences curriculum provides a broad scope of instruction which enables students to explore the various disciplines and professions involved with solving environmental problems as well as opportunities for students to focus their training in accordance with their own educational and career objectives. All students majoring in Environmental Sciences must complete a set of “core requirements” consisting of courses which provide a basic understanding of the physical, biological, and social sciences and their application to the analysis of environmental processes and issues. In addition to the core requirements, students must complete the required courses and an appropriate number of elective courses as designated in the options which they select. Students are not expected to select an option during the freshman year so that they can be introduced to dimensions of the environmental sciences about which they may have no previous knowledge. Those wishing to change their selection of an option may do so at any time as long as they are able to...
complete the requirements for the Bachelor's degree within the 216-unit limit specified by the College of Natural and Agricultural Sciences.

Environmental Internship Program

The Environmental Internship Program offers students opportunities to work with government agencies, private firms, and nonprofit organizations involved in environmental affairs. As excursions into professional life, internships provide "hands-on" experience in applying the principles presented in courses. Beyond the highly specialized training associated with on-the-job activities, students participating in the Environmental Internship Program can gain insights into their aptitudes, aspirations and work habits which enable them to clarify their academic and career objectives. Professional acquaintances established during internships can continue to serve as important contacts for students after the internship is completed.

Although most internships are part-time (12-15 hours per week) positions in the Riverside area, organizations which host student interns are located throughout the United States and in Washington, D.C. Students working as interns may receive stipends, hourly wages, or serve as volunteers, depending upon the specific appointment. Up to 16 units of credit toward the bachelor's degree may be earned by developing an academic component of the internship in consultation with a faculty supervisor and enrolling in ENSC 198-I.

Undergraduate Research

Students interested in enhancing the status of knowledge about environmental processes or seeking new solutions to environmental problems may gain training and experience as part-time employees in the Department's research laboratories and other research facilities, such as the Air Pollution Research Center and the U.S. Department of Agriculture Soil and Water Research Service, located on campus. Those wishing to conduct their own research under faculty supervision may earn academic credit by enrolling in ENSC 197. Expenses for both laboratory and field experiments are eligible for funding by the campus mini-grant program which supports undergraduate research and creative activity.

Natural Science Option

As a general curriculum emphasizing the natural sciences, this option is suitable for students wishing to maintain a broad range of choices in technically oriented environmental professions such as air and water pollution control, hazardous materials management, public health, natural resource management, and environmental impact analysis. The Natural Science option is also appropriate as background for graduate study in such disciplines as ecology, forestry, air and water science, and environmental engineering. Students may earn either the Bachelor of Arts or Bachelor of Science degree by completing the requirements specified by the College of Natural and Agricultural Sciences.

Social Science Option

Developed for students whose interests are oriented toward the social context of the environmental sciences, this option is appropriate preparation for careers dealing with environmental regulation, land use planning, environmental impact analysis and administration of environmental protection programs. The Social Science option is also suitable for those intending to continue their education in such areas as natural resource economics, urban planning, and environmental law. Both the Bachelor of Arts and the Bachelor of Science degrees are available to students in the Social Science option.

Soil Science Option

The Bachelor of Science in the Soil Science option provides specialized training needed by students whose professional interests require a detailed understanding of the soil environment in such areas as agriculture, hazardous waste site cleanup, groundwater quality control, ecosystem restoration, and forest and range management. Qualified students completing this option are able to enter UCR's graduate program in Soil and Water Sciences without significant deficiencies in their undergraduate curriculum.

Environmental Toxicology Option

As a curriculum which emphasizes the chemistry and biochemistry of toxic substances in the environment, this option prepares students for careers dealing with the control of toxics in the environmental media of air, water, soil, and ecosystems and in such related fields as public health and industrial hygiene. Qualified students completing the Bachelor of Science degree in the Environmental Toxicology option may enter UCR's graduate program in Environmental Toxicology without significant deficiencies in their undergraduate curriculum.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Natural and Agricultural Sciences in the Undergraduate Studies Section, of this catalog for requirements that students must satisfy.

Major Requirements

The major requirements for both the B.A. and the B.S. degrees in Environmental Sciences are as follows. Students must fulfill the courses listed under the lower-division and upper-division requirements and choose one of the options.

Note: With proper justification and the approval of the advisor, for any of the four options, students may substitute ENSC 197 or ENSC 198-I for one of the upper-division elective courses listed.

1. Lower-division requirements (29 units)
   a) ENSC 001, ENSC 002
   b) CHEM 001A-CHEM 001B-CHEM 001C
   c) MATH 005
   d) POSC 010

2. Upper-division requirements (15 units)
   a) ENSC 100, ENSC 101, ENSC 102, ENSC 191
   b) ENSC 100L or SWSC 100L

Natural Science Option (78-89 units)

1. BIOL 005A, BIOL 005B
2. PHYS 002A, PHYS 002B, PHYS 002C
3. PHYS 02LA, PHYS 02LB, PHYS 02LC are recommended
4. MATH 009A-MATH 009B
5. CHEM 112A-CHEM 112B
6. GEO 001 or GEO 002
7. ENSC 006/ECON 006 or ENSC 143A/ECON 143A (ECON 003 prerequisite), ENSC 172
8. STAT 100A-STAT 100B or STAT 120A-STAT 120B

9. Elective Courses:
   a) At least one course from the following group:
      (1) BIOL 005C
      (2) CHEM 005, CHEM 112C
      (3) MATH 009C
A total of at least five courses from the following group (at least three must be Environmental Sciences or Soil and Water Sciences)

1. ENSC 127, ENSC 131, ENSC 135/ENTX 135, ENSC 136/ENTX 136, ENSC 138, ENSC 140/SWSC 140, ENSC 141, ENSC 142, ENSC 144/ENVE 144, ENSC 155, ENSC 163, ENSC 170, ENSC 174, ENSC 176/SWSC 176

2. BIOL 117, BIOL 121A/MCBL 121A, BIOL 121B/MCBL 121B, BIOL 160, BIOL 163

3. BPSC 130/BIOL 130

4. CHEM 109

5. ENTX 101

6. GEO 157, GEO 160, GEO 162, GEO 167, GEO 168A, GEO 168B


Social Science Option (85-92 units)

1. BIOL 002, BIOL 003
2. MATH 022
3. GEO 001 or GEO 002
4. ECON 003

6. SOC 110A (SOC 001 prerequisite) or ECON 111
7. STAT 100A-SOC 110B or STAT 120A-SOC 110C (SOC 110A prerequisite for SOC 110B)

8. Elective Courses:
   a) At least one course from the following group:
      (1) ENSC 140/SWSC 140, ENSC 141, ENSC 142, ENSC 144/ENVE 144, ENSC 155, ENSC 163, ENSC 176/SWSC 176
      (2) BPSC 134/ENSC 134/SWSC 134, ENSC 104/SWSC 104, ENSC 107/SWSC 107, ENSC 138/GEO 138/SWSC 138, SWSC 111, SWSC 124

b) A total of at least six courses from the following group:
   (1) Economics: ECON 102A, ECON 102B, ECON 146, ECON 148, ECON 155, ECON 160/BSAD 160
   (2) Society and culture: ANTH 132, ANTH 134, ANTH 135, ANTH 186/LNST 186, PHIL 117, SOC 137, SOC 143/URST 143, SOC 182/HMDV 182/URST 182, SOC 184
   (3) Regulation and law: BSAD 182/POSC 182, POSC 101, POSC 166, POSC 181, POSC 183
   (4) Management: BSAD 121/STAT 121, BSAD 122, GEO 157, GEO 167, MATH 120

Soil Science Option (89-90 units)

1. BIOL 005A, BIOL 005B
2. CHEM 112A-CHEM 112B
3. MATH 009A-MATH 009B
4. PHYS 002A, PHYS 002B, PHYS 002C
5. PHYS 02LA, PHYS 02LB, PHYS 02LC are recommended
6. GEO 001 or GEO 002
7. ENSC 006/ECON 006 or ENSC 143A/ECON 143A (ECON 003 prerequisite)
8. STAT 100A-STAT 100B or STAT 120A-STAT 120B
9. Elective Courses:
   a) A total of at least four courses from the following group:
      (1) ENSC 127, ENSC 131
      (2) BPSC 134/ENSC 134/SWSC 134, ENSC 104/SWSC 104, ENSC 107/SWSC 107, ENSC 138/GEO 138/SWSC 138, SWSC 111, SWSC 124
   b) At least one course from the following group:
      (1) CHEM 005, CHEM 112C
      (2) MATH 009C
   c) A total of at least two courses from the following group:
      (1) ENSC 136/CHEM 136/ENTX 136/SWSC 136, ENSC 140/SWSC 140, ENSC 141, ENSC 142, ENSC 155, ENSC 163, ENSC 176/SWSC 176
      (2) BPSC 103, BPSC 130/BIOL 130, BPSC 143/BIOL 143, BPSC 146
      (3) GEO 030, GEO 157, GEO 160

Environmental Toxicology Option (80-92 units)

1. BIOL 005A, BIOL 005B
2. CHEM 005 or BIOL 005C, CHEM 112A-CHEM 112B
3. ENTX 101, ENTX 154
4. MATH 009A-MATH 009B
5. PHYS 002A, PHYS 002B, PHYS 002C
6. PHYS 02LA, PHYS 02LB, PHYS 02LC are recommended
7. ENSC 006/ECON 006 or ENSC 143A/ECON 143A (ECON 003 prerequisite)
8. BCH 100 or BCH 110A-BCH 110B, BIOL 102 or BIOL 121A/MCBL 121A, BCH 110C or BIOL 107A
9. STAT 100A-SOC 110B or STAT 120A-SOC 110B
10. Elective Courses:
    a) At least one course from the following group:
       (1) ENSC 127, ENSC 131, ENSC 135/ENTX 135, ENSC 136/ENTX 136/SWSC 136, ENSC 140/SWSC 140, ENSC 141, ENSC 142, ENSC 144/ENVE 144, ENSC 155, ENSC 163, ENSC 176/SWSC 176
       (2) BPSC 134/ENSC 134/SWSC 134, ENSC 104/SWSC 104, ENSC 107/SWSC 107, ENSC 138/GEO 138/SWSC 138, SWSC 111, SWSC 124
    (3) ENTX 150/BIOL 150

Minor

The Minor in Environmental Sciences consists of:

1. Lower-division requirements (20 units)
   a) ENSC 002 or ENSC 017; ENSC 006/ECON 006
   b) CHEM 001A-CHM 001B-CHM 001C
2. Upper-division requirements (21 units)
   a) ENSC 100, ENSC 100L, ENSC 101, ENSC 102
   b) Eight (8) units of additional upper-division courses in Environmental Sciences, no more than 4 units of which are in courses numbered 190-198

No more than 8 of the 21 upper-division units may be in courses required by the student's major.

See Minors under the College of Natural and Agricultural Sciences in the Undergraduate
Studies section of this catalog for additional information on minors.

Concentration Areas

Students wishing to specialize in a particular science or discipline may do so by working with an advisor to select an appropriate sequence of elective courses within one of the required options. Sample areas of concentration and suggested courses are:

1. Water science:
   - ENSC 136/Chem 136/ENTX 136/SWSC 136, ENSC 140/SWSC 140, ENSC 141, ENSC 142, ENSC 163

2. Environmental chemistry:

LOWER-DIVISION COURSES

ENSC 001. Introduction to Environmental Science: Natural Resources. (4) F
Lecture, three hours; discussion, one hour. An introduction to environmental science, focusing on natural resource description, management, and conservation. Topics covered include ecosystem characteristics and function; material and energy flows; population dynamics; and influence of population on the environment; energy resources and conservation; and mineral and soil resources and their management. Credit is awarded for only one of ENSC 001 or ENSC 001H. Jury

ENSC 001H. Honors Introduction to Environmental Science: Natural Resources. (4) F
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ENSC 001. An introduction to environmental science, focusing on natural resource description, management, and conservation. Topics covered include ecosystem characteristics and function; material and energy flows; population dynamics and influence of population on the environment; energy resources and conservation; and mineral and soil resources and their management. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENSC 001 or ENSC 001H. Jury

ENSC 002. Introduction to Environmental Science: Environmental Quality. (4) W
Lecture, three hours; discussion, one hour. An introduction to environmental science, focusing on the impact of human development and technology on the quality of natural resources and living organisms. Topics covered include soil, water, and air pollution; water, land, and food resources; wildlife management and species endangerment; toxicology and risk management; and solid and hazardous waste management. Credit is awarded for only one of ENSC 002 or ENSC 002H. Jury

ENSC 002H. Honors Introduction to Environmental Science: Environmental Quality. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ENSC 002. An introduction to environmental science, focusing on the impact of human development and technology on the quality of natural resources and living organisms. Topics covered include soil, water, and air pollution; water, land, and food resources; wildlife management and species endangerment; toxicology and risk management; and solid and hazardous waste management. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENSC 002 or ENSC 002H. Jury

ENSC 003. Contemporary Issues in the Environmental Sciences. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An issue-oriented approach to understanding the scientific principles behind environmental issues. Case studies of environmental issues appearing in the mass media provide the context for assessing the status of scientific knowledge and its role in human decision making. Credit awarded for only one of ENSC 003 or ENSC 003H. Yates

ENSC 003H. Honors Contemporary Issues in the Environmental Sciences. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ENSC 003. An issue-oriented approach to understanding the scientific principles behind environmental issues. Case studies of environmental issues appearing in the mass media provide the context for assessing the status of scientific knowledge and its role in human decision making. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ENSC 003 or ENSC 003H. Yates

ENSC 006. Introduction to Environmental Economics. (4)
Lecture, three hours; discussion, one hour. An introduction to the basic principles of economics and their application to problems of environmental quality and natural resource utilization. Emphasis is on the failure of markets as a cause of environmental degradation and the role of government in resolving problems of resource scarcity. Cross-listed with ECON 006. This course does not satisfy the Natural Science breadth requirement for the College of Humanities, Arts, and Social Sciences.

ENSC 007. Environmental Impacts of Urbanization. (4) F,W
Lecture, two hours; discussion, two hours. Prerequisite(s): none. Lectures and simulation exercises illustrating applications of principles from the physical and biological sciences to the analysis of urban systems and their impact on air and water quality, ecosystems, and reciprocal impacts at the urban-rural interface. Opportunities and constraints for mitigating the environmental impacts of urbanization. Biogeography

UPPER-DIVISION COURSES

ENSC 100. Introduction to Soil Science. (3) F
Lecture, three hours. Prerequisite(s): CHEM 001A-CHEM 001B-CHEM 001C, concurrent enrollment in SWSC 100L or ENSC 100L. GEO 001 is recommended. Introduction to morphology, physics, chemistry, microbiology, fertility, and classification of soils in relation to their uses in the environment.

ENSC 100L. Land Resources Laboratory. (2) F
Lecture, one hour; laboratory, three hours. Prerequisite(s): CHEM 001A-CHEM 001B-CHEM 001C and concurrent enrollment in ENSC 100; GEO 001 is recommended. Properties of lands as related to natural landscapes and their use by man. Requirements of land for agricultural, urban, industrial, and recreational use. Applications of remote sensing to land resource evaluation.

ENSC 101. Water Resources. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 006/ECON 006 or consent of instructor. The hydrologic cycle, the geographical distribution of water, aquatic ecosystems and the use of species and communities as indicators of water quality, the uses of water, the problems of allocating water and a critical analysis of the several devices through which water is allocated among competing demands. Letey

ENSC 102. Introductory Atmospheric Science. (4) S
Lecture, three hours; laboratory, six hours. Prerequisite(s): CHEM 005 or ENSC 100 or consent of instructor. A study of the chemistry of the solid, liquid, and gas phases in soils and soil-like materials. Topics include solid and solution equilibria, mineral solubility, clay mineralogy, ion exchange, surface chemistry, redox reactions, kinetics, and the chemistry of organic contaminants and toxic trace elements in soils. Cross-listed with SWSC 104. Amrhein

ENSC 103. Introductory Environmental Soil Chemistry. (5) F
Lecture, three hours; laboratory, six hours. Prerequisite(s): CHEM 005 or ENSC 100 or consent of instructor. A study of the chemistry of the solid, liquid, and gas phases in soils and soil-like materials. Topics include solid and solution equilibria, mineral solubility, clay mineralogy, ion exchange, surface chemistry, redox reactions, kinetics, and the chemistry of organic contaminants and toxic trace elements in soils. Cross-listed with SWSC 104. Amrhein

ENSC 104. Introductory Water Quality. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 001A-CHEM 001B-CHEM 001C, concurrent enrollment in ENSC 100; GEO 001 is recommended. The causes and consequences of air pollution. Air quality standards. Stratospheric and tropospheric ozone. Introduction to the chemistry of air pollution and air pollution control strategies. Arey

ENSC 105. Introductory Air Pollution. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 005 or ENSC 100 or consent of instructor. A study of the chemistry of the solid, liquid, and gas phases in soils and soil-like materials. Topics include solid and solution equilibria, mineral solubility, clay mineralogy, ion exchange, surface chemistry, redox reactions, kinetics, and the chemistry of organic contaminants and toxic trace elements in soils. Cross-listed with SWSC 104. Wu

ENSC 127. Transport Processes through Soils as Related to Environmental Contaminants. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 001A-CHEM 001B-CHEM 001C, concurrent enrollment in ENSC 100; GEO 001 is recommended. Description of transport processes (including similarities in concepts and approaches) of water, heat, and inorganic and organic chemicals and electricity through porous media such as soils. Application of these principles to the movement of environmental contaminants through soil will be made. Farmer

ENSC 131. Biology of the Soil Environment. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A and BIOL 005B, CHEM 112A-CHEM 112B, ENSC 100, SWSC 100L; or consent of instructor. The inhabitants of soil and their interrelationships with environmental quality. Biogeochemical cycling in terrestrial ecosystems, including wetlands; anthropogenic compounds in soils and their fate, transformations, and food chain transfer. Soil biotic effects on water and air quality.
ENSC 134. Soil Conditions and Plant Growth. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 130/RFC 130, ENSC 100; or consent of instructor. A study of the chemical, physical, and biological properties of soils and their influence on plant growth and development. Topics include soil-plant relationships, fundamentals of plant mineral nutrition; soil nutrient pools and cycles; soil acidity, alkalinity, salinity, and sodicity; root symbioses and rhizosphere processes. Cross-listed with SWSC 134 and RFC 134. Parker

ENSC 135. Chemistry of the Clean and Polluted Atmosphere. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 112A-CHEM 112B or consent of instructor; ENSC 102 is recommended. Structure of the troposphere and stratosphere; formation of atmospheric ozone; tropospheric NOx chemistry; methane oxidation cycle; phase distributions of chemicals; wet and dry deposition; chemistry of volatile organic compounds; formation of photochemical air pollution; modeling of air pollution and control strategies; stratospheric ozone depletion and global warming. Cross-listed with CHEM 135 and ENTX 135. Atkinson

ENSC 136. Chemistry of Natural Waters. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 005 or a grade of "C" or better or ENSC 104/SWSC 104 with a grade of "C-" or better or consent of instructor. Introduction to processes controlling the chemical composition of natural waters. Topics include chemical equilibria, acid-base and coordination chemistry, redox reactions, precipitation-dissolution, air-water exchange, and use of equilibrium and kinetic models for describing marine nutrient, trace metal, and sediment chemistry. Cross-listed with CHEM 136, ENTX 136, and SWSC 136. Ziemann

ENSC 138. Soil Morphology and Classification. (4) S
Lecture, three hours; laboratory, normally three hours; two one-day field trips. Prerequisite(s): ENSC 100, GEO 001 or GEO 002; or consent of instructor. The study of soils as they occur in the field and their relations to current and past environmental conditions. Use of field and laboratory data to understand soil genesis, causes of soil variability, fundamentals of soil classification, and land use potential. Laboratory exercises include the description and interpretation of soils and landscapes in the field. Cross-listed with GEO 138 and SWSC 138. Graham

ENSC 140. Limnology. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 001A or CHEM 011A, CHEM 001B or CHEM 011B, CHEM 001C or CHEM 011C, ENSC 101. Study of surface waters. Considerers in detail the physical and chemical processes in surface waters, aquatic biology, ecosystem dynamics, and aspects of surface water quality and modeling. Cross-listed with SWSC 140. Anderson

ENSC 141. Aquatic Microbiology. (4) F
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 002 or BIOL 005A. BIOL 003 or BIOL 005B; CHEM 001A-CHEM 001B or CHEM 011C-CHEM 011B-CHEM 011C; ENSC 101. Topics include microorganisms in natural and human-impacted waters; their distribution, enumeration, and activity; human pathogens in surface and ground water; transmission of disease via contaminated water; and regulations pertaining to microorganisms in water. Yates

ENSC 142. Water Quality. (4) F
Lecture, four hours. Prerequisite(s): CHEM 001A-CHEM 001B-CHEM 001C or CHEM 011A-CHEM 011B-CHEM 011C; ENSC 101; upper-division standing or consent of instructor. Topics include principles and practices of water pollution control; basic concepts of water quality management; and the chemistry and physics of water purification processes. Chang

ENSC 142L. Water Quality Laboratory. (1) F
Laboratory, three hours. Prerequisite(s): ENSC 142 (may be taken concurrently). Laboratory exercises in water quality evaluation and water purification processes. Chang

ENSC 143A. Environmental Economics. (4) F
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 003, MATH 022 or equivalent; or consent of instructor. Introduction to economic analysis of natural resources and the environment with emphasis on environmental quality. Topics include environment-economic interactions and social choice theory; source control costs, damage valuation, and efficient pollution control; and design of efficient and equitable environmental policy. Cross-listed with ECON 143A. Meixner

ENSC 143B. Natural Resource Economics. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 143A/ENSC 143A or consent of instructor. Considerations the extraction and use of natural resources. Topics include land use and natural capital economics and valuation; economics of mineral and nonrenewable resources including recycling; and managing biological and renewable resources, including common property, efficient usage, and regulation. Cross-listed with ECON 143B.

ENSC 143C. Ecological Economics and Environmental Valuation. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 143A/ENSC 143A or consent of instructor. Survey of environmental valuation and economic well-being, long time-scale issues. Valuation methods covered include hedonic pricing, weak complements, contingent valuation, and ecosystem services. Environmental macroeconomic topics include population growth, biophysical constraints to economic growth, intertemporal welfare and sustainability, and sustainable development. Cross-listed with ECON 143C.

ENSC 144. Solid Waste Management. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 002 or BIOL 005A; CHEM 001C or CHEM 011C; either both ENSC 001 (or ENSC 001H) and ENSC 002 (or ENSC 002H) or ENV 171; MATH 099B (or MATH 099B) or MATH 022; or consent of instructor. A study of the characterization, collection, transportation, disposal, recycling, and composting of municipal solid waste. Emphasizes accepted management strategies and design procedures for recovering or disposing solid wastes while protecting public and environmental well-being. Cross-listed with ENV 144. Groha

ENSC 155. Principles and Applications of Bioremediation. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A-BIOL 005B; CHEM 112A-CHEM 112B; and ENSC 100. Principles, applications, and case histories of biological treatment in the cleanup of hazardous chemicals including remediation of contaminated soils, sediments, sludges, groundwater, and vapor. Frankenberger

ENSC 163. Hydrology. (4) W
Lecture, three hours; laboratory, three hours. Prerequisite(s): MATH 099A-MATH 099B or MATH 099A-MATH 099B; STAT 100A, STAT 100B; or consent of instructor. Introduction to the scientific study of the hydrologic cycle. Covers the measurement and evaluation of hydrologic processes, including the use of statistical methods. Explores computer techniques in hydrology with applications to water resource development and water quality problems, particularly those in California. The laboratory includes field and computer assignments. Meixner

ENSC 170. Workshop in Environmental Management. (4) S
Workshop, five hours. Prerequisite(s): upper-division standing or consent of instructor. Training exercise in which students make decisions and interact to influence the simulated physical, political, social, and economic environments of a typical American metropolitan area. Satisfactory (S) or No Credit (NC) only, but student may petition instructor for letter grade. Diage

Lecture, three hours; discussion, one hour. Prerequisite(s): ECON 006/ENSC 006; ENSC 001 or ENSC 001H; ENSC 002 or ENSC 002H. Principles and theories of analyzing environmental interactions. Critical analysis of methodologies for assessing the physical, biological, and social impacts on the environment by human activities. Synthesis of the subject matter through preparation of an environmental impact report. Diage

ENSC 174. Law, Institutions, and the Environment. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): ENSC 001 or ENSC 001H; ENSC 002 or ENSC 002H; or consent of instructor. Introduction to the important and complex issues of natural resource ownership, protection, and regulation in the institutional environment of local, state, and federal laws, implementing agencies, and competing interests in environmental protection. Decision making is examined in the context of the rights and limits of both private parties and the broad public interest in the use and protection of natural resources. Kindschy

ENSC 176. Acquisition and Analysis of Environmental Data. (5) Summer
Lecture, two hours; discussion, one hour; laboratory three hours; field, three hours. Prerequisite(s): ENSC 100, ENSC 101, ENSC 102, either STAT 100A and STAT 100B or STAT 120A-STAT 120B; or consent of instructor. Explores general principles of environmental sampling. Field exercises cover sampling and analysis of air, water, and soil; hydrologic and limnological measurements; and biological characterization of soils and surface waters. Topics also include principles and use of geographic positioning systems (GPS), basic surveying and cartographic techniques for site characterization, and interpretation and presentation of field and laboratory data using computer software. Cross-listed with SWSC 176. Parker, Andersson, Bytnarowicz

ENSC 190. Special Studies. (1-5) F,W,S
Variable hours. Prerequisite(s): upper-division standing and consent of instructor. Special studies as a means of meeting special curricular problems. Graded on Satisfactory (S) or No Credit (NC) basis; however, students may petition the instructor for a letter grade. Course is repeatable.

ENSC 191. Seminar in Professional Development in Environmental Sciences. (2) F,W,S
Seminar, two hours. Prerequisite(s): upper-division standing and consent of instructor. Lectures and discussions on scientific writing, critical analysis in reading, public speaking, job interview and resume preparation, and professional conduct. Students make both written and oral presentations on topics in Environmental Sciences.
ENSC 197. Research for Undergraduates (1-4) F,W,S
Variable hours. Prerequisite(s): upper-division standing and consent of instructor. Individual research on a problem relating to environmental science to be conducted under the guidance of an instructor. Graded on Satisfactory (S) or No Credit (NC) basis; however, students may petition the instructor for a letter grade. Course is repeatable.

ENSC 198-I. Internship in Environmental Sciences. (1-12) F,W,S
Field internship, three to thirty-six hours. Prerequisite(s): upper-division standing, ENSC 001 or ENSC 001H or equivalent; ENSC 002 or ENSC 002H or equivalent. An academic internship, involving participation in a functional capacity in the enhancement or maintenance of environmental quality, conducted under the joint supervision of an on-campus sponsor and a faculty member in Environmental Sciences. A final written report based on the internship experience is required. One unit of credit for every three hours per week spent in internship. Graded Satisfactory (S) or No Credit (NC), but in exceptional cases students may petition for a letter grade. Course is repeatable to a maximum of 16 units.

ENVIRONMENTAL SCIENCES GRADUATE PROGRAM
Subject abbreviation: ENSC

W. William A. Jury, Director
Program Office, 2207 Geology
(909) 787-2441; http://ese.ucr.edu/ES

Professors
Eugene N. Anderson, Ph.D. (Anthropology)
Janet T. Arey, Ph.D. (Environmental Sciences)
Roger Atkinson, Ph.D. (Environmental Sciences)
Andrew C.-S. Chang, Ph.D. (Environmental Sciences)
Donald A. Cooksey, Ph.D. (Plant Pathology)
Walter J. Farmer, Ph.D. (Environmental Sciences)
William T. Frankenberger, Jr., Ph.D. (Environmental Sciences)
Sarjpeet S. Gill, Ph.D. (Cell Biology and Neuroscience)
Robert C. Graham, Ph.D. (Environmental Sciences)
William A. Jury, Ph.D. (Environmental Sciences)
Keith C. Knapp, Ph.D. (Environmental Sciences)
Tien Lee, Ph.D. (Earth Sciences)
Douglas E. Maclaughlin, Ph.D. (Physics)
Mark R. Matsumoto, Ph.D. (Chemical and Environmental Engineering)
Richard A. Minnich, Ph.D. (Earth Sciences)
Ashok Mulchandani, Ph.D. (Chemical and Environmental Engineering)
Joseph M. Norbeck, Ph.D. (Chemical and Environmental Engineering)
Kimberly A. Prather, Ph.D. (Chemistry)
Harry W.K. Tom, Ph.D. (Physics)
Akula Venkatram, Ph.D. (Chemical and Environmental Engineering)
Jory A. Varmooff, Ph.D. (Physics)
Marylynn V. Yates, Ph.D. (Environmental Sciences)
Francisco Zaera, Ph.D. (Chemistry)

Associate Professors
Christopher Amrhein, Ph.D. (Environmental Sciences)
Michael A. Anderson, Ph.D. (Environmental Sciences)
Eric L. Chronister, Ph.D. (Chemistry)
David E. Crowley, Ph.D. (Environmental Sciences)
David A. Eastmond, Ph.D. (Cell Biology and Neuroscience)
Andrew J. Grosovsky, Ph.D. (Cell Biology and Neuroscience)
Michael A. McKibbon, Ph.D. (Earth Sciences)
Steven K. Park, Ph.D. (Earth Sciences)
David R. Parker, Ph.D. (Environmental Sciences)
Alan E. Williams, Ph.D. (Earth Sciences)

Assistant Professors
Juliane E. Allison, Ph.D. (Political Science)
Wilfred Chen, Ph.D. (Chemical and Environmental Engineering)
David M. Crohn, Ph.D. (Environmental Sciences)
Maria L. Cruz-Torres, Ph.D. (Anthropology)
Marc Deshusses, Ph.D. (Chemical and Environmental Engineering)
Linda Fernandez, Ph.D. (Environmental Sciences)
Rajesh K. Mehra, Ph.D. (Cell Biology and Neuroscience)
Thomas Meixner, Ph.D. (Environmental Sciences)
Umair Mohideen, Ph.D. (Physics)
Kurt Schwabe, Ph.D. (Environmental Sciences)
Anders O. Wistrom, Ph.D. (Chemical and Environmental Engineering)
Laosheng Wu, Ph.D. (Environmental Sciences)
Paul J. Zeimann, Ph.D. (Chemical and Environmental Engineering)
Jingsong Zhang, Ph.D. (Chemistry)

Adjunct Professor
James Lents, Ph.D. (Engineering)

Recent years have seen a dramatic increase at both the state and national level in the need for individuals trained to handle complex environmental problems. Numerous environmental concerns associated with pesticide application, waste disposal, air pollution, and other health-threatening activities have prompted regulatory agencies to develop strategies for the use and disposal of potentially hazardous materials. This situation has created a need in government and industry for scientists trained in a broad spectrum of disciplines. Well-trained environmental scientists are in demand at all levels of the regulatory process.

The Interdepartmental Graduate Program in Environmental Sciences mobilizes the expertise of UCR’s faculty by providing advanced educational opportunities for students interested in pursuing research, teaching, and professional careers in the wide spectrum of activities relevant to environmental science.

GRADUATE PROGRAM

Students normally will come to the program having completed an undergraduate degree in environmental science, in a related discipline such as atmospheric science, aquatic science, earth science, economics, hydrology, soil science, or one of the basic sciences such as biology, chemistry, or physics. Students will be expected to have completed the following courses or their equivalents before entering the program, or to make up the deficiency early in their graduate studies.

CHEM 001A-CHEM 001B-CHEM 001C or equivalent
PHYS 002A-PHYS 002B-PHYS 002C or equivalent
MATH 009A-MATH 009B or equivalent
BIOL 005A-BIOL 005B-BIOL 005C or equivalent
ECON 003 or equivalent

Students may conduct research in any environmentally related area of interest to a sponsoring faculty member. Examples are:

• Kinetic and products studies of the atmospheric chemistry of volatile organic compounds
• Laboratory studies of the dynamics, kinetics and products of the photolysis and reactions of small molecules in the gas phase
• Emissions of organic compounds from biogenic sources
• Atmospheric chemistry and genotoxicity of polycyclic aromatic hydrocarbons and their nitrated derivatives
• Atmospheric deposition of nitrogenous compounds and their effect on plant community structure and function in California ecosystems
• Fate and consequences of contaminants discharged into natural and constructed wetlands
• Integrated assessment of the food-chain hazards posed by trace metals released into the environment
• Ecotoxicology of contaminants in inland saline lakes in California (Salton Sea, Owens Lake bed)
• Geophysical monitoring of contaminant migration
• Shallow noninvasive detection of wastes and waste containers
• Field scale transport and fate of chemicals in the vadose zone
• Volatilization of organic chemicals from soil and water surfaces
• Transport and fate of pathogenic organisms in soils and aquifers
• Bioremediation of toxic substances in soils
• Theoretical and experimental studies of colloidal aggregation
• Economic issues associated with agriculture, natural resources, and the environment
• Economic impacts of air quality and climate on agriculture
• Management and policy issues associated with California water resources

There is no foreign language requirement for the program.

Master’s Degree

The general requirements for the M.S. degree in Environmental Sciences are found in the Announcement of the Graduate Division, University of California, Riverside. The graduate program offers only the thesis plan for the degree.

For information on required courses contact

Graduate Secretary
Environmental Sciences and Engineering
2217 Geology
University of California, Riverside,
Riverside, CA 92521
(909) 787-2441; karenh@u克拉c1.ucr.edu

Each quarter, students must enroll in the seminar course CHEM 257/SWSC 257 and give an oral presentation at the annual student seminar/retreat. A minimum of 36 quarter units of graduate and upper-division undergraduate courses in or significantly related to Environmental Sciences are required. At least 24 of the 36 units must be graduate courses. A maximum of 12 of the 24 graduate units may be in graduate research for the thesis. No more than two units of CHEM 257/SWSC 257 may be applied toward the 24-unit graduate requirement.

The student must write a thesis that is accepted by the Thesis Committee members and pass an oral defense of the thesis.

Doctoral Degree

Course Work: Upon acceptance to the Ph.D. program, the student selects a Course Work Advisory Committee consisting of three members of the faculty participating in the graduate program to assist in the planning of the individualized curriculum. For information on required courses contact

Graduate Secretary
Environmental Sciences and Engineering
2217 Geology
University of California, Riverside,
Riverside, CA 92521
(909) 787-2441; karenh@u克拉c1.ucr.edu

A course work study plan should be filed with the Graduate Advisor by the second quarter after admission. Each quarter, students must enroll in the seminar course CHEM 257/SWSC 257 and give an oral presentation at the annual student seminar/retreat. The elective courses prescribed by the student’s Course Work Advisory Committee will depend on the research interests of the student.

Comprehensive Written Examination. Following completion of all course work, the student writes a qualifying examination prepared and administered by the Written Qualifying Committee, which consists of five faculty members with interests in the students’ line of research. The written exam may be attempted only twice. If it is failed twice, the student will be redirected to the master’s degree or terminated from the program.

Oral Examination. A student who has successfully passed the written qualifying examination may proceed with the oral qualifying examination, conducted before the Oral Qualifying Examination Committee, which consists of five faculty members, one of whom must be outside the graduate program in Environmental Sciences. The oral examination may be attempted only twice. If the oral qualifying exam is failed twice, the student will be redirected to the master’s degree or terminated from the program. The written and oral exams will normally be taken at the end of the second year of graduate study.

Dissertation. All Ph.D. students write a doctoral dissertation, which is read and accepted by all members of the Doctoral Dissertation Committee, comprised of three faculty from the graduate program in Environmental Sciences. The student must pass a final, oral defense of the thesis in front of the three members.

Relationship between Master’s and Doctoral Programs. The master’s and Ph.D. programs are separate. Students who enter the Ph.D. program do not need to acquire a master’s first, although students may elect to take both. The normative time to degree is 15 quarters.

Career Opportunities

Students trained in the Interdepartmental Graduate Program in Environmental Sciences will be able to fill many areas of expertise needed in the state and nation. Such areas include regulatory agencies, consulting firms, government and academic research institutions, and industrial research facilities.

Environmental Toxicology

Subject abbreviation: ENTX

David A. Eastmond, Ph.D.
Chair and Program Director
Program Office, 1151 Batchelor Hall
(800) 735-7017 or (909) 787-4116
http://cnas.ucr.edu/~etox/home.html

Professors
Michael E. Adams, Ph.D. Neurosciences
(Entomology/Cell Biology and Neuroscience)
Janet T. Are, Ph.D. Atmospheric Chemistry
(Environmental Sciences)
Roger Atkinson, Ph.D. Atmospheric Chemistry
(Environmental Sciences)
Nancy E. Beckage, Ph.D. Biochemistry and Endocrinology
(Entomology/Cell Biology and Neuroscience)
Craig V. Byus, Ph.D. Pharmacology
(Biomedical Sciences)
Andrew C. Chang, Ph.D. Agricultural Engineering
(Environmental Sciences)
Associate Professors
- Andrew J. Grosovsky, Ph.D.
- David A. Eastmond, Ph.D.
- David E. Crowley, Ph.D.
- Dennis D. Focht, Ph.D.
- Margarita C. Currás-Collazo, Ph.D.
- Wilfred Chen, Ph.D.
- Joseph W. Eckert, Ph.D.
- Michael F. Dunn, Ph.D.
- Carl F. Cranor, Ph.D.
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- Kimberly A. Prather, Ph.D.
**Master's Degree**

Students enrolling in the master's degree program must meet the requirements for the Plan I of the UCR Graduate Council, take core courses as described above, and submit an acceptable thesis. Thirty-six (36) units are required of which 24 must be in graduate-level courses. No more than 12 units of ENTX 290, ENTX 297, and ENTX 299 may be used to satisfy the unit requirement. All students must enroll in the Environmental Toxicology seminar (ENTX 270) each quarter although no more than 3 units from seminar courses can be accrued towards degree credit. A final draft of the thesis is to be given to the Thesis Committee two weeks before the final oral examination. A final oral examination will consist of an open research seminar, presented by the candidate and advertised to all the students and faculty in the Environmental Toxicology Program. Following the seminar, the student will be subject to questioning by the Guidance Committee on the thesis research and on matters related to the general field of the thesis research.

**Doctoral Degree**

Students must meet general University requirements of the Graduate Division as found in the Graduate Studies section of this catalog. Beyond the required core sequence, all students must enroll in the Environmental Toxicology seminar (ENTX 270) and complete a program of courses to be approved by the Guidance Committee. All course work schedules will be submitted to the Graduate Advisor for approval. The Ph.D. degree will be awarded upon passing the preliminary and qualifying examinations and demonstrating an ability to do original research by preparation and submission of an acceptable dissertation.

The Preliminary Examination is a standardized, written test generally offered once a year prior to the beginning of the fall quarter. Students will normally take the Preliminary Examination following the completion of the core curriculum. The Preliminary Examination must be satisfactorily completed in order to enroll for the seventh academic quarter in the Ph.D. program. The Preliminary Examination consists of questions related to environmental, organismal and suborganismal aspects of toxicology. These questions are designed to test the student’s ability to synthesize and integrate concepts in toxicology, rather than merely reiterate the material covered in the Environmental Toxicology core curriculum.

The examination is administered by a committee consisting of the faculty members involved in teaching the core curriculum. Based on the results of this examination, the committee will recommend appointment of a faculty qualifying committee, additional course work in specific area(s) of weakness, transfer to a terminal master's program, or total withdrawal from the program. In exceptional circumstances, the preliminary examination can be taken a second time.

The qualifying examination is an oral examination conducted by the qualifying committee. The qualifying committee, appointed by the Graduate Dean, must be submitted by the faculty, will be composed of the student's major professor and four additional members, one of whom must be from outside the Graduate Environmental Toxicology group. The oral examination will include the student's area of specialization and research field as well as general subjects at the discretion of the Qualifying Committee. The qualifying examination must be successfully completed by the end of the ninth quarter of full time enrollment in the Ph.D. program. Under exceptional circumstances, the qualifying examination may be taken a second time. Upon successful completion of the qualifying examination, the student will be advanced to candidacy.

A Dissertation Committee composed of at least three members will be appointed by the Graduate Dean shortly after advancement to candidacy. A dissertation acceptable to all committee members must be submitted based upon independent, original research. A final draft of the dissertation is to be given to the Dissertation Committee two weeks before the dissertation defense seminar.

Before approval of the dissertation, students are required to orally present their research at a thesis defense seminar. The seminar must be advertised to the campus community and is open to all who wish to attend. Following the seminar, the student will be subject to questioning by the dissertation committee on the thesis research and on matters related to the general field of the thesis research.

**GRADUATE COURSES**

**UPPER-DIVISION COURSES**

**ENTX 101. Fundamental Toxicology.** (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, CHEM 112A-CHEM 112B-CHEM 112C or consent of instructor. Fundamental concepts relating to adverse effects of chemical agents. Topics covered include dose-response relationships, absorption, distribution, metabolism, excretion, mechanisms of toxicity, and the effects of selected environmental toxicants on various organ systems. Characterization and assessment of risks are also covered. Mehra

**ENTX 135. Chemistry of the Clean and Polluted Atmosphere.** (4) Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 112A-CHEM 112B or consent of instructor; ENVS 102 recommended. Structure of the troposphere and stratosphere; formation of atmospheric ozone; tropospheric NOx chemistry; methane oxidation cycle; phase distributions of chemicals; wet and dry deposition; chemistry of volatile organic compounds; formation of photochemical air pollution; modeling of air pollution and control strategies; stratospheric ozone depletion and global warming. Cross-listed with CHEM 135 and ENVS 135. Atkinson

**ENTX 136. Chemistry of Natural Waters.** (4) Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 005 with a grade of "C" or better or ENVS 104/SWCS 104 with a grade of "C" or better or consent of instructor. Introduction to processes controlling the chemical composition of natural waters. Topics include chemical equilibria, acid-base and coordination chemistry, oxidation-reduction reactions, precipitation-dissolution, air-water exchange, and use of equilibrium and kinetic models for describing marine nutrient, trace metal, and sediment chemistry. Cross-listed with CHEM 136, ENVS 136, and SWCS 136. Ziemann

**ENTX 150. Cancer Biology.** (4) Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 111 is recommended (may be taken concurrently). The origin, development, and treatment of cancer are explored with emphasis on molecular mechanisms. Topics include oncogenes, tumor suppressors, cell cycle and differentiation, AIDS, and heredity and environmental factors in the development of cancer. Cross-listed with BIOC 150. Sladek

**ENTX 154. Risk Assessment.** (4) Lecture, three hours; discussion, one hour. Prerequisite(s): ENTX 101, and either STAT 100A or STAT 105 or STAT 120A or consent of instructor. An introduction to the basic principles and methods by which health risks associated with exposure to chemical and physical agents are determined. Topics include hazard identification, dose response and exposure assessments, as well as risk characterization and management. Eastmond

**ENTX 200. Fate and Transport of Chemicals in the Environment.** (4) Lecture, four hours. Prerequisite(s): CHEM 109 or CHEM 110B; CHEM 112A-CHEM 112B-CHEM 112C, or consent of instructor. Identification of toxicants and their sources in the environment; equilibrium partitioning of chemicals in the environment (between air, water, soil, sediment, and health); use of physico-chemical properties; transport and chemical transformations of chemical compounds in air, water, and soil media. Includes case studies of fate and transport of selected toxic chemicals. Cross-listed with CHEM 246. Atkinson

**ENTX 200L. Analysis and Identification of Environmental Toxics.** (3) Lecture, one hour; laboratory, six hours. Prerequisite(s): ENTX 200, CHEM 125 (lecture portion only); or consent of instructor. Provides laboratory experience in specialized methods of identification and analysis of toxic organic compounds in gaseous, aqueous, and soil media. Methods of sample collection and extraction are presented. Students utilize both gas and liquid chromatographic techniques. Toxin analysis by gas chromatography (GC), GC/mass spectrometry, and GC/Fourier transform infrared spectroscopy is emphasized. Arey
ENTX 201. Principles of Toxicology. (4)
Lecture, three hours; seminar, one hour. Prerequisite(s): BCH 110A or consent of instructor. Biochemical and physiological mechanisms underlying the toxicity of environmental toxicants. The interaction of toxicants with subcellular components and macromolecules with emphasis on mechanism of action, in particular neurotoxicity of pesticides, chemical carcinogenesis, mutagenesis, and teratogenicity. Gill, Grosovsky

ENTX 202. Mechanisms of Toxicity. (4)
Lecture, three hours; seminar, one hour. Prerequisite(s): BCH 110C or consent of instructor. Biochemical and physiological mechanisms underlying the toxicity of environmental toxicants. The interaction of toxicants with subcellular components and macromolecules with emphasis on mechanism of action, in particular neurotoxicity of pesticides, chemical carcinogenesis, mutagenesis, and teratogenicity. Gill, Grosovsky

ENTX 203. Toxicology Laboratory. (3)
Lecture, one hour; laboratory six hours. Prerequisite(s): BCH 102 and ENTX 201 or consent of instructor. Laboratory methods for the determination of toxicity of chemicals and techniques to determine the interaction of toxicants with biochemical and physiological processes. Mehta

ENTX 211. Environmental and Molecular Carcinogenesis. (3)
Lecture, three hours. Prerequisite(s): BIOL 107A or equivalent consent of instructor. Molecular genetics of human cell response to environmental carcinogens. Discussions of DNA repair, mutagenesis, oncogenes, and tumor suppressors. Following presentation of introductory material, emphasis will be placed on student discussion of recent literature. Grosovsky

ENTX 215. Toxicants in Aqueous Media. (3)
Lecture, three hours. Prerequisite(s): CHEM 112A-CHEM 112B or consent of instructor. Analysis of loss pathways of toxicants present in surface waters, soil or groundwater. Includes chemical and biological degradation and transformation reactions, transport through soil, absorption to solid phases, and volatilization to the atmosphere. Farmer

ENTX 216. Biodegradation of Xenobiotic Chemicals. (3)
Lecture, three hours. Prerequisite(s): BCH 100, BIOL 121A/MCB 121A, BIOL 121B/MCB 121B or equivalents. Explores the importance of microorganisms in metabolizing synthetic organic chemicals. Topics include ecology, physiology, growth, isolation, and identification of degradative bacteria; bioremediation processes; and environmentally related problems. Examines studies of catabolic pathways including metabolites, enzymes, genes, and environmental factors. Cross-listed with BCH 216 and SWSC 216. Focht

ENTX 244. Airborne Toxic Chemicals. (3)
Lecture, three hours. Prerequisite(s): CHEM 109 or CHEM 110B, or consent of instructor. Atmospheric chemistry of airborne chemicals. Structure of the atmosphere. Gas-particle distributions of chemicals, and wet and dry deposition of gas and particles. Atmospheric reactions of organic compounds, with emphasis on toxics. Theoretical and experimental methods for the determination of atmospheric lifetimes and products of chemicals. Cross-listed with CHEM 244. Atkinson

ENTX 245. Chemistry and Physics of Aerosols. (3)
Lecture, three hours. Prerequisite(s): CHEM 109, CHEM 110B, or consent of instructor. Fundamentals of chemical and physical processes controlling behavior and properties of airborne particles. Topics include particle mechanics, electrical, optical, and thermodynamic properties; nucleation; surface and aqueous-phase chemistry; gas-particle partitioning; sampling; size and chemical analysis; atmospheric aerosols, and environmental effects. Cross-listed with CHEM 245 and SWSC 245. Ziemann

ENTX 257. Graduate Seminar in Cell, Molecular, and Developmental Biology. (1)
Seminar, one hour. Prerequisite(s): graduate standing. Lectures by visiting scholars on current research in cell, molecular, and developmental biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 257, BIOL 257, BMSC 257, BPS 257, ENTM 257, NEM 257, NSC 257, and PLPA 257.

ENTX 270. Seminar in Environmental Toxicology. (1)
Seminar, one hour. Prerequisite(s): graduate status in Environmental Toxicology. Lectures by visiting scholars and staff on current research topics in Environmental Toxicology. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Mehta

ENTX 290. Directed Studies. (1-6)
Research, three to eighteen hours. Prerequisite(s): graduate status in Environmental Toxicology. Literature or research performed towards the development of a dissertation or other research performed under the direction of staff. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENTX 297. Directed Research. (1-6)
Research, three to eighteen hours. Prerequisite(s): graduate status in Environmental Toxicology. Directed research performed towards the development of a dissertation problem or other research performed under the direction of staff. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ENTX 299. Research for Thesis or Dissertation. (1-12)
Research, three to thirty-six hours. Prerequisite(s): graduate status in Environmental Toxicology. Research performed under the direction of a faculty member towards a thesis or dissertation. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

ETHNIC STUDIES

Subject abbreviation: ETST

Armando N. Avila, Ph.D., Chair
Department Office, 3606 Humanities and Social Sciences; (909) 787-4577

Professors
Edna M. Bonacich, Ph.D. Race, Class, and Gender (Ethnic Studies/Sociology)
Alfredo M. Miranda, Ph.D. Chicano Studies (Ethnic Studies/Sociology)
Armando Navarro, Ph.D. Chicano Studies

Assistant Professor
Hershini Bhana, Ph.D. African American Studies

Associate Professors
Alicia Arrizón, Ph.D. Chicano Studies
Edward T. Chang, Ph.D. Asian American Studies
Ralph L. Crowder, Ph.D. African American Studies
Carolyn B. Murray, Ph.D. African American Studies

Assistant Professor
Hershini Bhana, Ph.D. African American Studies

MAJORS

Ethnic Studies is the systematic and comparative study of racial/ethnic groups, and the impact of law and social inequality on contemporary society. The curriculum focuses on the experiences of racial/ethnic groups that historically have been economically, educationally, politically, legally, and socially disadvantaged, and attempts to determine why these groups have not been fully integrated into the fabric of American society.

The Department of Ethnic Studies offers majors leading to a Bachelor of Arts degree in Ethnic Studies, African American Studies, Asian American Studies, Chicano Studies, and Native American Studies. Students may develop a general emphasis in Ethnic Studies or a concentration on a specific group. The majors prepare students to pursue careers that require knowledge and expertise relevant to the history, culture, and socioeconomic status of racial/ethnic groups in contemporary society.

With the changing ethnic composition of society there is a growing demand for individuals in education, government, and the private sector with knowledge and expertise in race and ethnic relations. An Ethnic Studies major can be used to prepare students for graduate or professional school as well as for careers in a number of areas including education, corrections, law, human services, social welfare, urban planning, and state and county government.
Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The Ethnic Studies Department offers a B.A. degree in Ethnic Studies, African American Studies, Asian American Studies, Chicano Studies, or Native American Studies.

Ethnic Studies Major

The major requirements for the B.A. degree in Ethnic Studies are as follows:

Core courses required of all majors

1. Lower-division requirements (8 units)
   a) ETST 001
   b) One course chosen from ETST 002, ETST 003, ETST 005, or ETST 007

2. Upper-division requirements (48 units)
   a) ETST 100, ETST 131, ETST 191R
   b) An minimum of two courses chosen from ETST 104, ETST 106, ETST 109I, ETST 133, ETST 157, ETST 158
   c) Twenty (20) additional upper-division units in Ethnic Studies courses chosen from the following four areas of emphasis:
      (1) African American Studies
      (2) Asian American Studies
      (3) Chicano Studies
      (4) Native American Studies
     d) A minimum of two courses chosen from Ethnic Studies courses that are comparative in nature

Note: No internship courses may be counted toward the upper-division electives in Ethnic Studies.

The requirements for the B.A. degree listed in this catalog apply only for first-year students entering Fall 1998 and thereafter. All other students -- continuing, transferring, and readmitting — may follow the former requirements (a list of which is available at the Ethnic Studies Department and also in the 1997-98 UCR General Catalog) but must graduate by June 2002.

African American Studies Major

The major requirements for the B.A. degree in African American Studies are as follows:

Core courses required of all majors

1. Lower-division requirements (8 units)
   a) ETST 001
   b) ETST 003

2. Upper-division requirements (48 units)
   a) ETST 100, ETST 131, ETST 191R
   b) ETST 104 and 109I
   c) Twenty (20) additional upper-division units in Ethnic Studies courses chosen from courses focusing on the African American experience
   d) A minimum of one Ethnic Studies course chosen from two of the following four areas of emphasis (8 units)
      (1) Asian American Studies
      (2) Chicano Studies
      (3) Native American Studies
      (4) Comparative Issues

Note: No internship courses may be counted toward the upper-division electives in Ethnic Studies.

The requirements for the B.A. degree listed in this catalog apply only for first-year students entering Fall 1998 and thereafter. All other students — continuing, transferring, and readmitting — may follow the former requirements (a list of which is available at the Ethnic Studies Department and also in the 1997-98 UCR General Catalog) but must graduate by June 2002.

Chicano Studies Major

The major requirements for the B.A. degree in Chicano Studies are as follows:

Core courses required of all majors

1. Lower-division requirements (8 units)
   a) ETST 001
   b) ETST 002 or ETST 004/HIST 004

2. Upper-division requirements (48 units)
   a) ETST 100, ETST 131, ETST 191R
   b) Twenty-eight (28) additional upper-division units in Ethnic Studies chosen from courses focusing on the Chicano experience
   c) A minimum of one Ethnic Studies course chosen from two of the following four areas of emphasis (8 units)
      (1) African American Studies
      (2) Asian American Studies
      (3) Native American Studies
      (4) Comparative Issues

Note: No internship courses may be counted toward the upper-division electives in Ethnic Studies.

The requirements for the B.A. degree listed in this catalog apply only for first-year students entering Fall 1998 and thereafter. All other students — continuing, transferring, and readmitting — may follow the former requirements (a list of which is available at the Ethnic Studies Department and also in the 1997-98 UCR General Catalog) but must graduate by June 2002.

Native American Studies Major

The major requirements for the B.A. degree in Native American Studies are as follows:

Core courses required of all majors

1. Lower-division requirements (8 units)
   a) ETST 001
   b) ETST 007
2. Upper-division requirements (48 units)
   a) ETST 100, ETST 131, ETST 191R
   b) ETST 157 and 158
   c) Twenty (20) additional upper-division units in Ethnic Studies chosen from courses focusing on the Native American experience
   d) A minimum of one Ethnic Studies course chosen from two of the following four areas of emphasis (8 units)
      (1) African American Studies
      (2) Asian American Studies
      (3) Chicano Studies
      (4) Comparative Issues

Note: No internship courses may be counted toward the upper-division electives in Ethnic Studies.

The requirements for the B.A. degree listed in this catalog apply only for first-year students entering Fall 1998 and thereafter. All other students — continuing, transferring, and readmitting — may follow the former requirements (a list of which is available at the Ethnic Studies Department and also in the 1997-98 UCR General Catalog) but must graduate by June 2002.

Ethnic Studies/Anthropology Major
The major in Ethnic Studies/Anthropology is discontinued. Students currently working toward the B.A. degree in Ethnic Studies/Anthropology (as well as readmitted students and transfer students accepted prior to Fall 1999) will be allowed to complete the degree requirements but must graduate by June 2001. For a listing of degree requirements consult the 1996-97 UCR General Catalog.

Ethnic Studies/Sociology Major
The major in Ethnic Studies/Sociology has been discontinued. Students currently working toward the B.A. degree in Ethnic Studies/Sociology (as well as readmitted students and transfer students accepted prior to Fall 2000) will be allowed to complete the degree requirements but must graduate by June 2002. For a listing of degree requirements consult the 1997-98 UCR General Catalog.

Minors
The Ethnic Studies minor consists of 4 lower-division units, 20 upper-division units, and appropriate prerequisites as needed.
1. Lower-division requirement (4 units)
   ETST 001
2. Upper-division requirements (20 units)
   a) ETST 100, ETST 131, ETST 191R
   b) Eight (8) additional upper-division units in Ethnic Studies courses that are either comparative in nature or focus on African Americans, Asian Americans, Chicanos, or Native Americans (Courses must be approved by Ethnic Studies advisor.)

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

African American Studies Minor
The African American Studies minor consists of 4 lower-division units, 20 upper-division units, and appropriate prerequisites as needed.
1. Lower-division requirement (4 units): ETST 003
2. Upper-division requirements (20 units):
   a) ETST 191R
   b) Sixteen (16) additional upper-division units in Ethnic Studies focusing on African Americans

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Asian American Studies Minor
The Asian American Studies minor consists of 4 lower-division units, 20 upper-division units, and appropriate prerequisites as needed.
1. Lower-division requirement (4 units): ETST 005
2. Upper-division requirements (20 units):
   a) ETST 191R
   b) Sixteen (16) additional upper-division units in Ethnic Studies focusing on Asian Americans

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Chicano Studies Minor
The Chicano Studies minor consists of 4 lower-division units, 20 upper-division units, and appropriate prerequisites as needed.
1. Lower-division requirement (4 units): ETST 002 or ETST 004/HIST 004
2. Upper-division requirements (20 units):
   a) ETST 191R
   b) Sixteen (16) additional upper-division units in Ethnic Studies focusing on Chicanos

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Native American Studies Minor
The Native American Studies minor consists of 4 lower-division units, 20 upper-division units, and appropriate prerequisites as needed.
1. Lower-division requirement (4 units): ETST 007
2. Upper-division requirements (20 units):
   a) ETST 191R
   b) Sixteen (16) additional upper-division units in Ethnic Studies focusing on Native Americans

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Education Abroad Program
The Ethnic Studies Department encourages students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units toward graduation. Because strategy in choosing courses to be taken here and courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult the Ethnic Studies advisor for assistance. For further details, see the Education Abroad Program under International Services Center in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

LOWER-DIVISION COURSES

ETST 001. Introduction to the Study of Race and Ethnicity. (4)
Lecture, three hours; discussion, one hour. ETST 001 will introduce students to major concepts and controversial issues in the study of race and ethnicity and shall provide a general overview of topics to be covered in more specialized Ethnic Studies courses. Credit is awarded for only one of ETST 001 or ETST 001H. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 001H. Honors Introduction to the Study of Race and Ethnicity. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ETST 001. Introduces students to major concepts and controversial issues in the study of race and ethnicity. Provides a general overview of topics covered in more specialized Ethnic Studies courses as well as an introduction to the methodology of scholarly research. Satisfactory (S) or No Credit (NC) grading is not available.
ETST 002. Introduction to Chicano Studies in Comparative Perspective. (4)
Lecture, three hours; discussion, one hour. This course provides an overview of the Chicano experience from 1848 to the present. The Chicano experience is compared and contrasted with the experiences of the dominant society and with those of other racial and ethnic groups. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 003. Introduction to African American Studies in Comparative Perspective. (4)
Lecture, three hours; discussion, one hour. This course is designed to provide an overview of the African American experience in the United States from antiquity to the present. It employs comparative and interdisciplinary perspectives. Emphasis is placed on examining the African American experience in a world context and comparing the African American experience to the experiences of other racial and ethnic groups. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 004. Introduction to Chicano History. (4)
Lecture, three hours; extra reading, three hours. The historical heritage of the Chicano from Spanish and Indian origins to the Chicano movement, with an emphasis on the period since 1845. Cross-listed with HIST 004. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 005. Introduction to Asian American Studies in Comparative Perspective. (4)
Lecture, three hours; discussion, one hour. This course provides an overview of the Asian experience in the United States from the mid-nineteenth century immigration to Hawaii and the U.S. Pacific coast to the present. The Asian experience is compared and contrasted with that of African Americans and Chicanos/Latinos. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 007H. Honors Introduction to Native American Studies in Comparative Perspective. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to ETST 007. Provides an overview of the Native American experience in the United States from antiquity to the present. Compares and contrasts the Native American experience with the experiences of the dominant society and those of other racial and ethnic groups. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of ETST 007 or ETST 007H. This course fulfills the Social Science requirement for the College of Humanities, Arts, and Social Sciences.

ETST 008. Introduction to Chicano Cultural Studies. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): none. Identifies the cultural process of the Chicano experience, beginning with the Chicano Movement, and discusses the ideas, beliefs, values, and the forms of consciousness that shaped this process. Introduces literary and cultural works such as essay, film, theatre, music, poetry, and art. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 012. Religious Myths and Rituals. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to the meanings, origins, and functions of religion; the roles of myths, rituals, and symbols; and images of transcendence. Religious beliefs and expressions are examined from diverse cultural perspectives. Source materials are drawn from indigenous Native (North and South) American, African American, and/or Asian American religions. Cross-listed with RLS 012. Credit is awarded for only one of ETST 012/RLST 012 or ETST 012H/RLST 012H. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 012H. Honors Religious Myths and Rituals. (4)
Lecture, three hours; discussion, one hour; extra reading, three hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. An introduction to the meanings, origins, and functions of religion; the roles of myths, rituals, symbols; images of transcendence; and understanding religious beliefs and expressions from diverse cultural perspectives. Source materials are drawn from indigenous Native (North and South) American, African American, and/or Asian American religions. Cross-listed with RLS 012H. Credit is awarded for only one of ETST 012/RLST 012 or ETST 012H/RLST 012H. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both. O’Connor

ETST 014. Popular Musics of the World. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. Introduction to issues surrounding popular and urban musics of the world, focusing on three major geocultural areas: Africa, Asia, and the Americas. Emphasizes the relationship between mass-mediated music and issues of cultural hegemony, resistance, and subversion. Analyzes the cultural impact of media technologies on music performance and reception. Cross-listed with MUS 014 and URST 014. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 061. Martin Luther King, Jr. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ETST 001, HIST 060, or consent of instructor. A study of the life of Martin Luther King, Jr. with emphasis on the civil rights campaigns he led in the period, 1955-1968 and on the social and political philosophies he taught and espoused. Cross-listed with HIST 061. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 091. Freshman Research Seminar. (4)
Seminar; three hours; term paper, three hours. Prerequisite(s): freshman standing or consent of instructor. A focused research seminar designed uniquely each time it is taught. Instructors emphasize their field and area of research. Students work in small groups. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

Upper-Division Courses

ETST 100. Race and Ethnicity in a Comparative Perspective. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ETST 001. Explores the interrelationships between race, class, ethnicity, and the operation of social processes. Accordingly, readings for this course center on the comparative well-being of African Americans, Hispanics (especially Chicanos), Native Americans, and Asian Americans. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 102. The Political Economy of Race and Class. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course explores the interrelationships among race, class, ethnicity, and the operation of market processes. Readings for this course will center on the comparative economic well-being of African Americans, Chicanos, Asian Americans, and Native Americans. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 104. Introduction to African Civilization. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to African studies from an interdisciplinary perspective. Describes the dynamics of African society. Examines the Black diaspora’s interaction with and influence upon the political and historical development on the continent of Africa. Evaluates, when relevant, the impact of the non-African upon the African. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 105A-ETST 105B.
History of Black Americans. (4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): consent of instructor. The study of the experiences of Black people in the United States with emphasis on the ideas and institutions that have shaped those experiences from the period of slave trading in West Africa to the present. ETST 150A: from West African backgrounds to 1877; ETST 150B: from 1877 to 1965. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.
ETST 106. Theory in Asian American Studies. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines major themes that influenced current theory in Asian American studies: the racist nature of political and legal institutions, labor markets, the popular culture; contemporary feminist theory and politics; criticism of the assimilation paradigm which predicted eventual political and economic integration into mainstream American life. Explores how Asian American communities were viewed as sites for political mobilization, the building of alternative institutions, and the creation of an oppositional culture. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 107. Blacks in America: Assimilation vs. Separation. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): consent of instructor. An analytical survey of the themes of assimilation and separatism in the history of Blacks in the United States. Lecture-discussion, readings, and audio-visual presentations. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 108 (E-Z). Special Topics in Chicano Studies. (4)
Prerequisite(s): consent of instructor. Selected topics in: E. Culture, Ethnicity, and Social Change; F. The Conditions of Education for Chicanos; I. Mexican Immigration and the Chicano Community; L. The Labor and Legal History of the Chicano; M. Careers: Personal, Cultural, and Ethnic Factors; P. Chicano Poetry and Theatre. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

ETST 109 (E-Z). Special Topics in African American Studies. (1-4)
Lecture, one to three hours; extra reading, three hours. Prerequisite(s): ETST 003, upper-division standing; or consent of instructor. Selected topics addressing the issues of the African American experience. Reading, research, and discussion on the African American experience. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

ETST 110 (E-Z). Special Topics in Asian American Studies. (1-4)
Lecture, one to three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor; ETST 005 for ETST 110M. Selected topics addressing the issues of the Asian American experience. Reading, research, and discussion on the Asian American experience. E. Japanese American Internment During World War II; G. Community Research: Asian American Community I. The Korean American Experience; K. Foreign Policy and Asian Americans; M. Comparative History of the Asian Experience in America. See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

ETST 111. Ethnic Politics Practicum in Political Change. (4)
Lecture, three hours; practicum, three hours. Prerequisite(s): upper-division standing or consent of instructor. Studies theories and practices of comparative ethnic political change. Examines topics intrinsic to the understanding of how to effect political change within the Chicano, African American, Asian American, Native American, and other ethnic communities, as well as the dominant societies. This course fulfills the Social Science requirement for the College of Humanities, Arts, and Social Sciences.

Lecture, three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor. The Civil Rights Movement of the 1950s and 1960s. The main focus will be on the “grass roots.” African American aspects of the “The Movement,” as it was popularly known, from school desegregation to voting rights and beyond. Cross-listed with HISA 135. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 113. The African American Woman. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Use professional literature of the social sciences and American history and other media to examine the achievements, myths, and stereotypes of the African American woman from her roots in ancient Africa to the present. Cross-listed with HISA 134. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 114. Contemporary Latina Writing in the U.S. (4)
Lecture, three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor. Critical readings of Chicana, Puerto Rican, and Cuban American authors. Overview of contemporary literature (1970 to present) written by Latinas who reside permanently in the United States. Theatre, poetry, and narrative is closely examined and compared. Focuses on the political, historical, social, and cultural processes that give rise to this literature. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 115 (E-Z). Topics in Native American History. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Selected topics addressing the issues of the Native American. Includes reading, research, and discussion on the Native American experience. F. Early America: Emerging Interpretations. Cross-listed with HISA 144 (E-Z). See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

ETST 116. Disease, Death, and Survival in the Native American Experience. (4)
Lecture, three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines selected topics focusing on disease, death, and survival among Native Americans. Traditional native beliefs about death, dying, mourning, afterlife, and disease causation are examined. Central to the course is an analysis of epidemiological transitions among Native Americans, the infection of native peoples by European diseases during the ages of pestilence and famine, and major shifts in native health, particularly during the twentieth century. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 117 (E-Z). Themes and Topics in African American History. (4)
Lecture, three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor. A thematic and topical approach to the study of African American history from the early Nile Valley civilizations to the twentieth century. Examines the temporal and spatial development of African societies—including their social, political, economic, and ideological systems—during the precolonial, colonial, and postcolonial periods. F. West African History to 1800; I. Nineteenth- and Twentieth-Century Africa and European Imperialism; J. Ancient Africa; K. Africa from 1000-1880; M. Twentieth-Century Africa. Cross-listed with HIST 137 (E-Z). See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences for breadth requirement information.

ETST 118. Music Cultures of Africa. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of African performance, addressing the large culture areas of the continent. Emphasizes African aesthetics. Special attention is paid to contemporary popular music, its roots in older genres, and its ongoing role in postcolonial politics. Cross-listed with MUS 129. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 119. The Black Indian Experience: African Americans and Native Americans. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates growth and evolution of the relationship between African Americans and Native Americans. Focuses on selected Native American nations and their relationship with transplanted Africans, blended communities of blacks and Indians, the process of transculturalization, black Indians as outlaws, and blacks and Indians in a modern educational experiment. This course satisfies the Social Science requirement of the College of Humanities, Arts, and Social Sciences.

ETST 120. Contemporary Native American Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Study of representative works of fiction, nonfiction, and poetry from the 1960s to the present. Emphasis upon the works of Louise Erdrich, Joy Harjo, N. Scott Momaday, Simon Ortiz, Leslie Silko, Gerald Vizenor, and James Welch, among others. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 121. Street Gangs in Comparative Perspective. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of the emergence and development of street gangs as a historical and contemporary phenomenon. Special emphasis is given to alternative conceptions, definitions, and theories of gang formation. The approach is comparative, focusing on African American, Asian American, Chicano, and White street gangs. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 122. Family, Sex Roles, and the Chicano. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A systematic analysis of Chicano family and sex roles, with special emphasis on the functions of the Chicano family in contemporary society. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.
ETST 123. Chicano Politics in Comparative Perspective. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of contemporary Chicano politics, political movements, ideologies, relations with intergovernmental agencies, political attitudes, and participation in the political process. Comparison of the Chicano political experience of that of other racial and ethnic groups in American politics. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 124. The Chicana. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): consent of instructor. The unique experience of the Chicana viewed from social, intellectual, historical, and artistic perspectives. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 125. Chicano Political History: Nineteenth and Twentieth Centuries. (4)
Seminar, three hours; term paper, three hours. Prerequisite(s): ETST 002 or ETST 004/HIST 004; upper-division standing. Seminar surveying the history of Chicano politics in the United States from Mexican independence in 1821 to the present. Assesses the continuity of the Chicano political tradition through a comparison of the Chicano political experience before and after the establishment of American sovereignty. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 126. The Chicano and the Law. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): consent of instructor. Analysis of the relationship of the Chicano to the U.S. legal and judicial system. Topics include traditional sociological and criminological theories, history of the Chicano and the law, the Pachuco image and the Chicano, and the police and correctional institutions. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 128. Chicano Sociology. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Analysis of the experience of Mexicans in U.S. society, history as a minority; mass immigration in the twentieth century; relationships with American institutions, present socioeconomic status, variations in social status from region to region, political emergence and variations in values, social relations and interaction with non-Mexicans. Cross-listed with SOC 128. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 131. Race, Class, and Gender. (4)
Lecture, three hours; discussion, one hour; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course will compare and contrast race, class, and gender as basis of social inequality and oppression. It will focus especially on the intersection of all three, examining the experiences of poor and working-class women of color. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 132. Chicano Contemporary Issues. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Provides students with demographic and historical overview of the status of Latinos in the United States today and of the salient issues plaguing them. Utilizing an interdisciplinary approach, analyzes strategies, tactics, and policies that may effectively deal with these issues. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 133. Asian Diaspora: Historical, Contemporary, and Comparative Perspectives. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of the dispersal, transplantation, and transformation of Asian populations in selected regions of the world—the Americas, Europe, the Middle East, and Asia Pacific—as viewed from the historical and contemporary experiences of the Chinese, Japanese, Filipinos, Koreans, Vietnamese, and other Asian groups in the contexts of colonization, cultural and political domination, and an emerging global economy. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 137. The Vietnamese Americans: The Refugee and Immigrant Experience. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course will focus on the Vietnamese American experience in contemporary society. Special emphasis will be placed on the relationship of Vietnamese Americans to the larger society and on intergenerational strains and conflicts. Among the topics addressed are: 1) socioeconomic and educational problems; 2) the family, religion; and 4) the relationship between Vietnamese Americans and other racial ethnic groups (African Americans, Native Americans, Anglo, and Chicanos). This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 138. Asian American People Through Their Literature. (4)
Lecture, three hours; term paper, three hours. This course will focus on the Vietnamese American experience in contemporary society. Special emphasis will be placed on the processes of participation within institutions and of dealing with complex organizations. Concepts to be studied include conflict, role identity, and socialization. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 140. Asian American Women. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. The study of organizations and institutions, focusing on their effects on the Chicano. Special emphasis will be placed on the processes of participation within institutions and of dealing with complex organizations. Concepts to be studied include conflict, role identity, and socialization. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 141A. A Survey of Black Literature: The Folk Period. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): consent of instructor. A survey of the significant Black American writers and literary movements in the nineteenth and early twentieth centuries (the folk period of Black literature). Attention will focus on slave narratives, protest literature, and the Harlem Renaissance. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 141B. A Survey of Black Literature: 1930 to the Present. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): ETST 141A. A survey of the significant Black American writers and literary movements from 1930 to the present. Attention will focus on the work of literary movements represented by such writers as Wright, Ellison, Brooks, Baldwin, Baraka, and others. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 142. Organizations, Institutions, and the Chicano. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course will focus on the Vietnamese American experience in contemporary society. Special emphasis will be placed on the processes of participation within institutions and of dealing with complex organizations. Concepts to be studied include conflict, role identity, and socialization. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 143A. Filipino American History: Pre-1898 through 1941. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course will focus on the Vietnamese American experience in contemporary society. Special emphasis will be placed on the processes of participation within institutions and of dealing with complex organizations. Concepts to be studied include conflict, role identity, and socialization. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 143B. Filipino American History: 1941 to the Present. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): ETST 143A upper-division standing or consent of instructor. This course will focus on the Vietnamese American experience in contemporary society. Special emphasis will be placed on the processes of participation within institutions and of dealing with complex organizations. Concepts to be studied include conflict, role identity, and socialization. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 143C. Filipino Social Movements. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course will focus on the Vietnamese American experience in contemporary society. Special emphasis will be placed on the processes of participation within institutions and of dealing with complex organizations. Concepts to be studied include conflict, role identity, and socialization. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 144. Race and Ethnicity in Hawaii. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): ETST 001 or ETST 005. A comparative and historical survey of the racial dynamics of Hawaii’s
multicultural community and the intersections between Hawaii's ethnic groups, the native Hawaiians, the white (“haole”) population, and the plantation immigrant groups, especially the Chinese, Japanese, Filipinos, and Portuguese. Includes a discussion of the Pacific Islander population in contemporary Hawaii. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 145. Law and Subordination. (5)**

Lecture, three hours; field, six hours. Prerequisite(s): upper-division standing in Ethnic Studies or Sociology; ETST 128/SOC 128. A comparative and historical analysis of subordinated communities and law with special emphasis on integrating theoretical understanding of racial, class, and gender subordination. Field experience working directly with groups that have traditionally lacked equal access to the legal and judicial system. Cross-listed with SOC 145. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 146. Educational Perspectives on the Chicanos. (4)**

Lecture, three hours; term paper, three hours. Prerequisite(s): consent of instructor. An examination of educational policy issues facing Chicano students, such as testing and testing procedures, learning styles, socialization, and language acquisition. Other topics will deal with the impact of significant legislative acts related to the education of Chicanos. Cross-listed with EDUC 146. This course does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 147. History of Black Education. (4)**

Lecture, three hours; individual study, four hours. Prerequisite(s): upper-division standing. This course examines major themes in Black education: the education of slave and free Blacks; role of missionaries and philanthropists in Black education; the growth of Black colleges; curricular debates; and the NAACP challenge of the “separate but equal” doctrine. This course does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 148. Caribbean Culture and Society. (4)**

Seminar; three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of the Caribbean region from a historical, cultural, and political perspective. Emphasis on contemporary issues affecting the Caribbean, and the struggle of its people to maintain their identity. Cross-listed with ANTH 168 and LNST 168. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 149. Street Scholars: Struggles and Contributions of Self-Trained Black Historians and Steptacker Radicals (4)**

Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the growth and evolution of self-trained African American intellectuals and activists from the late nineteenth to the 1980s. Analyzes ideas, contributions, and worldviews of selected street scholars pertaining to the destiny and direction of race struggle in America, the Caribbean, and Africa. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 150. Asian American Family and Culture. (4)**

Lecture; three hours; term paper, three hours. Prerequisite(s): ETST 005 or consent of instructor. Examines the influence of cultural legacy, ethnic background, immigration history, community structure, race, class, and economic status on the sociological and psychological dynamics of the Asian American family and personality. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 153. Contemporary Latin American and Chicano Novels. (4)**

Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Reading, in-depth analysis, and discussion of contemporary Latin American novels in translation and Chicano novels, based on a consideration of their salient, formal, and thematic concerns. Cross-listed with LNST 153. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 155. Politics of the Chicano Movement. (4)**

Lecture, three hours; term paper, three hours. Prerequisite(s): ETST 007, upper-division standing or consent of instructor. Examines the various aspects of the politics of the Chicano movement from 1965 to 1974. Focuses on in-depth analysis of the movement's historical genesis, leadership, ideology, organizations, strategy, and tactics. As well as the questions that brought it into being. Also examines the forces that contributed to its demise. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 156. Native American Diaspora. (4)**

Lecture, three hours; term paper, three hours. Prerequisite(s): ETST 007, upper-division standing or consent of instructor. Analyzes historical Native American migrations. Explores involuntary Native American diaspora throughout America forced by interactions with Spanish, French, Dutch, and English colonists. Examines nineteenth- and twentieth-century reservations and forced and voluntary removals and relocations. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 157. Roots of American Indian Tradition. (4)**

Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Analyzes selected spiritual beliefs of America's native peoples. Examines rituals, ceremonies, customs, and the historical significance of selected tribes and bands. Explores the conditions and forces which shaped American Indians and influence them today. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 165. Sociolinguistics and the Chicano Community. (4)**

Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the regional and social variation in language use within the Chicano community. Specific issues addressed are the maintenance of Spanish language use, private versus public language use, the need for bilingual social services, language as a human right versus language as a constitutional right, and the political economy context of language. General sociolinguistic theory and methodology are also addressed. Cross-listed with SOC 165. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 166. Issues in Bilingual/Bicultural Education. (4)**

Lecture, three hours; individual study, three hours. Prerequisite(s): bilingual facility and consent of instructor. An intensive analysis of issues involved in developing and implementing bilingual/bicultural programs for Chicano children. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 167. Psychological Development of Black Children. (4)**

Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 002. This course will analyze both the traditional theoretical approaches to the study of Black children and innovative approaches that are currently being developed by Black psychologists. The course will cover topics in the areas of cognitive, social, and personality development. Cross-listed with PSYC 167. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 168. Psychological Aspects of the Black Experience. (4)**

Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 002. This course examines the interdependence between personal characteristics, African American culture, and the social conditions which foster the Black experience. Group membership, life styles, role factors, and situational settings as social norms will be explored in order to understand the uniqueness of the Black experience. Cross-listed with PSYC 168. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 169. U.S. Latinos: Crossing Borders, Crossing Cultures. (4)**

Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces the idea of Latino identity as a way to study heterogeneity of ethnic group identification. Focuses on historical chronology, literary tradition, and other cultural practices. Emphasis is on the experience of diversity and pluralism within the Latino experience. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

**ETST 170. Third World Literature. (4)**

Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 002. This course examines the independence between personal characteristics, African American culture, and the social conditions which foster the Black experience. Group membership, life styles, role factors, and situational settings as social norms will be explored in order to understand the uniqueness of the Black experience. Cross-listed with WRIT 170. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.
ETST 171. Rap, Hip-Hop, and Popular Culture. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 172. Music Cultures of Southeast Asia. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 173. Black Art in America. (4)
Lecture, three hours; field, three hours. Prerequisite(s): consent of instructor. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 175. Gender, Ethnicity, and Borders. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ETST 001 or WMST 010 or upper-division standing. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 176. Geographies of Pain: Black Women, Trauma, and Survival. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 180. California Indian History. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 181. Southwestern Indian History. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 182. Northwestern Indian History. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 183. Native American Oral Literature. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ETST 007; upper-division standing or consent of instructor. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 184. American Indian Policy in the Twentieth Century. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): upper-division standing or consent of instructor. This course will begin with the end of the treaty-making period and the point in time that the United States emerged as a colonial power (1871). The history of the relationship between the United States government and the American Indian tribes from the year 1871 to 1988 will be presented phase by phase. In addition, it will explore the position and role of the American Indian during the last twenty years. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, Grade

ETST 185. Native American Law. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

ETST 190. Special Studies. (1-5)
Individual study, three to fifteen hours. Prerequisite(s): upper-division standing and consent of instructor. Independent study and research by qualified undergraduates under the supervision of a particular faculty member. Course is repeatable to a maximum of 16 units.

ETST 191 (E-Z). Seminar in Ethnic Studies. (4)
Seminar, three hours; term paper, three hours. Prerequisite(s): for ETST 191E, ETST 191G, ETST 191K, ETST 191R: consent of instructor; for ETST 191N, ETST 002 or ETST 008; for ETST 191S: upper-division standing or consent of instructor: Selected topics in the ethnohistories and cultures of African American, Chicano/Latino, and Native American ethnic groups. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

ETST 192H. Junior Honors Seminar. (4)
Seminar, three hours; term paper, three hours. Prerequisite(s): junior standing or consent of instructor. Advanced research in various fields of faculty interest and expertise. Students are required to complete a research paper utilizing primary and secondary documents and other sources. Seminar is given year to year. Course is repeatable to a maximum of 12 units. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 193. Senior Research Seminar. (4)
Seminar, three hours; term paper, three hours. Prerequisite(s): senior standing or consent of instructor. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 196G (E-Z). Community Internship. (1-12)
Internship, three to forty-eight hours. Prerequisite(s): upper-division standing and consent of instructor. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 198-I. Individual Internship. (1-12)
Internship, three to thirty-six hours. Prerequisite(s): upper-division standing and consent of instructor. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

ETST 252A-ETST 252B. Interpreting the Mexican American Experience. (4-4)
Seminar, three hours; research, three hours. Prerequisite(s): graduate standing. Multidisciplinary

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study of the Mexican American experience through the examination of selected hypotheses, the analysis and discussion of assigned readings, and the conduct and presentation of individual research projects. Grade withheld until sequence completed.

ETST 255. Critical Issues in Asian American Studies (4)
Seminar; three hours; individual study three hours. Prerequisite(s): graduate standing. Examines and seeks to develop a critical appreciation of research literature on Asians in America and to develop alternative interpretations of the Asian American experience. Topics include Asian American history, economic, political, social, and psychological issues.

ETST 256. Critical Issues in Asian Pacific American Communities. (4)
Seminar; three hours; practicum, three hours. Prerequisite(s): graduate standing. Examines contemporary issues facing Asian Pacific American communities. Students engage in active research in these communities.

ETST 289. Colloquium in Ethnic Studies. (1)
Colloquium, one hour. Prerequisite(s): graduate standing or consent of instructor. Lectures and discussions by students, faculty, and invited scholars on selected topics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

ETST 290. Directed Studies. (1-6)
Scheduled research, three to eighteen hours. Prerequisite(s): graduate status and consent of instructor. Lectures and discussions by students, faculty, and invited scholars on selected topics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MAJOR
The Film and Visual Culture major provides an interdisciplinary examination of film, video, television, multimedia, and visual culture with a primary emphasis on history and theory and a secondary focus on production. The major consists of three curricular clusters:

1. Film and Visual Media
2. Film, Literature, and Culture
3. Ethnography, Documentary, and Visual Culture

The Film and Visual Culture major combines the breadth of an interdisciplinary major with a precise focus on visual media. Its interdisciplinary structure brings together approaches to visual media that would usually be separated by discipline. Students will have a unique opportunity to acquire critical skills in the reading and analysis of media texts together with those involved in various modes of media production. This applied experience includes training in creative, documentary, and ethnographic video; photography; and multimedia production. Familiarity with media, either for academic or industrial applications, enhances one’s understanding of any field in the humanities or social sciences today.

Degree Requirements

University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements
The B.A. in Film and Visual Culture involves three possible clusters of courses, each with different emphases in curriculum. The requirements are as follows:

1. Lower-division requirements (16 units):
   - FVC 004/ART 004, FVC 020/WRLT 020, two electives from lower-division film courses (8 units)
   - FVC 009/FILM 009, FVC 010/FILM 010 (2 units)
   - FVC 101/FILM 101 (2 units)

2. Upper-division requirements (40 units):

   a) Film, Photography, and Media History (8 units)
      - AHS 181; AHS 182; FVC 110 (E-Z), FVC 145 (E-Z); ENGL 145 (E-Z)
      - FVC 172 (E-Z)/CPLT 172 (E-Z) or FVC 173 (E-Z)/CPLT 173 (E-Z)
      - FVC 176/CHN 176, FVC 177/AHS 177; FVC 186/AHS 186, with relevant course material; HIST 114 (E-Z)

   b) Non-Hollywood Cinema and Media (12 units)
      - AHS 182, ART 136, AST 185/CHN 185, ETST 170/WRIT 170, ETST 175/WMST 175, FVC 135/ART 135
      - FVC 170 (E-Z), FVC 171 (E-Z)/CPLT 171 (E-Z), FVC 172 (E-Z)/CPLT 172 (E-Z)
      - FVC 176/AHS 176, FVC 184/AST 184, FVC 185/ART 185, FVC 186/AHS 186, with relevant course material; HIST 114 (E-Z)

   c) Media Production (4 units)
      - FVC 140/ART 140, FVC 147/ART 147
      - FVC 150/ART 150
      - FVC 166A/CRTW 166A/THEA 166A
      - FVC 166B/CRTW 166B/THEA 166B

   d) Film, Photography, and Media History (8 units)
      - AHS 181; AHS 182; FVC 110 (E-Z), FVC 145 (E-Z); ENGL 145 (E-Z)
      - FVC 172 (E-Z)/CPLT 172 (E-Z) or FVC 173 (E-Z)/CPLT 173 (E-Z)
      - FVC 176/CHN 176, FVC 177/AHS 177; FVC 186/AHS 186, with relevant course material; HIST 114 (E-Z)
Cluster 2: Film, Literature, and Culture

While this cluster also offers a disciplinary foundation in film and visual studies, its focus is on the interrelations among film and visual media, literature, and culture in international cinemas, and literatures. The methodologies stressed here are less formally and more thematically and/or culturally based.

1. Lower-division requirements (16 units):
   a) Film, Photography, and Media History (8 units)
      AHS 181; AHS 182; FVC 110 (E-Z);
      FVC 145 (E-Z)/ENGL 145 (E-Z);
      FVC 160/ART 160; FVC 172 (E-Z)/
      CPLT 172 (E-Z) or FVC 173 (E-Z);
      FVC 176/AHS 176; FVC 177/AHS 174;
      FVC 186/AHS 186; HIST 114 (E-Z)
   b) Non-Hollywood Cinema and Media (12 units)
      AHS 182, ART 136, ART 185/CHN 185,
      FVC 135/ART 135, FVC 170 (E-Z)/
      DNCE 170 (E-Z), FVC 173 (E-Z)/
      CPLT 173 (E-Z), FVC 176/AHS 176,
      FVC 184/ART 184/CPLT 184/JPN 184,
      GER 118 (E-Z)
   c) Film and Media Theory (4 units)
      ART 146 (E-Z), FVC 105 (E-Z),
      FVC 139/SOC 139, FVC 143 (E-Z)/
      ENGL 143 (E-Z), FVC 144 (E-Z)/
      ENGL 144 (E-Z), FVC 160/ART 160,
      FVC 170 (E-Z)/DNCE 170 (E-Z),
      FVC 172 (E-Z)/CPLT 172 (E-Z),
      FVC 186/AHS 186, SOC 138
   d) Studies in Film, Literature, and Culture (16 units):
      ETST 170/WRIT 170, FVC 143 (E-Z)/
      ENGL 143 (E-Z), FVC 144 (E-Z)/
      ENGL 144 (E-Z), FVC 170 (E-Z)/
      DNCE 170 (E-Z), FVC 172 (E-Z)/
      CPLT 172 (E-Z), FVC 174 (E-Z)/
      CPLT 174 (E-Z), WRIT 180V

2. Upper-division requirements (40 units):
   a) Film, Photography, and Media History (8 units)
      AHS 182, FVC 110 (E-Z),
      FVC 145 (E-Z)/ENGL 145 (E-Z),
      FVC 176/AHS 176, FVC 177/AHS 174,
      FVC 186/AHS 186, HIST 114 (E-Z)
   b) Non-Hollywood Cinema and Media (12 units)
      AHS 182, ART 136, ART 185/CHN 185,
      ETST 170/WRIT 170, FVC 135/
      ART 135, FVC 170 (E-Z)/DNCE 170 (E-Z),
      FVC 173 (E-Z)/CPLT 173 (E-Z),
      FVC 176/AHS 176, FVC 184/ART 184/
      CPLT 184/JPN 184, GER 118 (E-Z)
   c) Ethnography and Documentary, Texts, and Production (20 units)
      ANTH 254/WMST 254 (permission of
      instructor), ART 146 (E-Z),
      ENGL 121 (E-Z), ETST 175/WMST 175,
      ETST 183/HISA 183, FVC 103/
      ANTH 103, FVC 140/ART 140,
      FVC 147/ART 145, FVC 160/ART 160,
      FVC 143 (E-Z)/ENGL 143 (E-Z),
      FVC 144 (E-Z)/ENGL 144 (E-Z),
      HIST 102, HIST 238A-HIST 238B (per-
      mission of instructor)
   d) Film and Visual Culture (24 units)
      At least 4 but not more than 8 units
      from the following:
      ENGL 142 (E-Z), EUR 115F,
      EUR 119 (E-Z), FREN 109C,
      FREN 109D, FREN 182, FREN 183

Cluster 3: Ethnography, Documentary, and Visual Culture

This cluster provides a basic knowledge of film and visual studies as well as an-depth coverage of the theories and methods that guide production of ethnographic and documentary films, and visual and cultural studies. Students will receive both critical and applied training in ethnographic methods and documentary film and video practices.

1. Lower-division requirements (16 units): ANTH 001, FVC 004/ART 004, FVC 020/WRIT 020, one lower-division elective
2. Upper-division requirements (40 units):
   a) Film, Photography, and Media History (8 units)
      AHS 182, FVC 110 (E-Z),
      FVC 145 (E-Z)/ENGL 145 (E-Z),
      FVC 176/AHS 176, FVC 177/AHS 174,
      FVC 186/AHS 186, HIST 114 (E-Z)
   b) Non-Hollywood Cinema and Media (12 units)
      AHS 182, ART 136, ART 185/CHN 185,
      ETST 170/WRIT 170, FVC 135/
      ART 135, FVC 170 (E-Z)/DNCE 170 (E-Z),
      FVC 173 (E-Z)/CPLT 173 (E-Z),
      FVC 176/AHS 176, FVC 184/ART 184/
      CPLT 184/JPN 184, GER 118 (E-Z)
   c) Ethnography and Documentary, Theories, Texts, and Production (20 units)
      ANTH 254/WMST 254 (permission of
      instructor), ART 146 (E-Z),
      ENGL 121 (E-Z), ETST 175/WMST 175,
      ETST 183/HISA 183, FVC 103/
      ANTH 103, FVC 140/ART 140,
      FVC 147/ART 145, FVC 160/ART 160,
      FVC 143 (E-Z)/ENGL 143 (E-Z),
      FVC 144 (E-Z)/ENGL 144 (E-Z),
      HIST 102, HIST 238A-HIST 238B (per-
      mission of instructor)
   d) Film and Visual Culture (24 units)
      At least 4 but not more than 8 units
      from the following:
      ENGL 142 (E-Z), EUR 115F,
      EUR 119 (E-Z), FREN 109C,
      FREN 109D, FREN 182, FREN 183

Minor

The Film and Visual Culture minor provides an interdisciplinary examination of film, television, digital multimedia, and visual culture, with an emphasis on history and theory, rather than production, in order to develop media literacy. A minimum of 24 units (one lower-division course and five upper-division courses) are required. No course can be used to satisfy more than one requirement.

1. Lower-division requirements (4 units) from the following:
   a) FVC 004/ART 004
   b) FVC 020/WRIT 020, FVC 021/WRIT 021
2. Upper-division requirements (20 units):
   a) One course from each of the following three groups:
      (1) Non-Hollywood Cinema
      FVC 135/ART 135, FVC 173 (E-Z)/CPLT 173 (E-Z)
      (2) Film and Media History
      FVC 110 (E-Z), FVC 145E/ENGL 145E, FVC 186/AHS 186
      (3) Film and Media Theory
      FVC 105 (E-Z), FVC 143 (E-Z)/ENGL 143 (E-Z),
      FVC 144 (E-Z)/ENGL 144 (E-Z),
      FVC 145F/ENGL 145F, FVC 172 (E-Z)/
      CPLT 172 (E-Z)
   b) Choose two additional courses from the three groups above or from the following courses:
      FVC 166/WMST 166, ETST 175/WMST 175,
      FVC 170 (E-Z)/DNCE 170 (E-Z),
      FVC 174 (E-Z)/CPLT 174 (E-Z)

A minor is a set of courses focused on a single discipline or an interdisciplinary thematic area. There can be no substitution for the courses listed as constituting a minor without approval of the governing department or committee. There is no limit on the number of minors a student can declare. Students must declare the minor(s) before their final degree check before graduation by completing a petition with the Student Affairs offices in the College of Humanities, Arts, and Social Sciences, the College of Natural and Agricultural Sciences, or the College of Engineering, depending on their major. Prior approval by the department or committee offering the
minor is required. The minor is noted on the transcript at the time the degree is conferred. See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

LOWER-DIVISION COURSES

FVC 004. Introduction to Video Art. (4) Lecture, two hours; screening, six hours. Prerequisite(s): none. An introduction to video as an art form based in production and contemporary media theory. Basic production techniques, operation of the camcorder and the fundamentals of live-action production, and editing. A series of screenings, readings, and discussions examine documentary, experimental, and other applications of the media arts in relation to contemporary art practice and new genres as installation and performance. Cross-listed with ART 004. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 005. Introduction to Contemporary Critical Issues in Art. (4) Lecture, three hours; field trip, three hours every other week; extra reading, three hours. Examines basic principles and methodologies of theory as applied to the interpretation and creation of works of art. Includes lectures, discussions, readings, screenings, gallery visits, and critiques. Cross-listed with ART 005.

FVC 007. Introduction to Digital Imaging. (4) Lecture, three hours; laboratory, three hours. Introduction to making art by utilizing the Macintosh computer. Emphasis is on the personal, theoretical, and conceptual implications of such work within the broader field of contemporary art. Cross-listed with ART 007.

FVC 008. Modern Western Visual Culture. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): none. Focusing on broadly defined cultural practices— including painting, photography, video, architecture, and film— this course introduces the major historical, aesthetic, and theoretical issues in twentieth-century visual culture with an eye toward political and social themes relevant to contemporary life. Cross-listed with AIS 008.

FVC 020. Introduction to Film Studies. (4) Lecture, three hours; screening, three hours. Prerequisite(s): none. An introduction to the formal and narrative principles of film construction and to various critical approaches to the cinema, such as auteur and genre theory. Studies film movements and political cinema. Cross-listed with WRIT 021. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 021. Critical Approaches to World Cinema. (4) Lecture, three hours; screening, three hours. Prerequisite(s): none. Surveys critical approaches to the cinema such as auteur and genre theory. Studies film movements and political cinema. Cross-listed with WRIT 021. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 025. Culture Clash: Studies in Latino Theatre and Film. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to U.S. Latino theatre and film from 1965 to the present. Students read the major works of authors and examine important films and videos. Cross-listed with ENGL 021 and THEA 021.

FVC 028. From Hamlet to Babylon 5: Introduction to Design in Film, Television, and Theatre. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to the design process for film, television, and theatre. Through exercises, lectures, videos, and on-site visits, students explore the design process, the influence of design on the viewer, and how looks are achieved in different media. Cross-listed with ART 026 and THEA 038.

UPPER-DIVISION COURSES

FVC 103. Introduction to Visual Anthropology. (4) Seminar, three hours; outside research and projects, three hours. Prerequisite(s): ANTH 001 or ANTH 001H or consent of instructor. An introduction to the rapidly growing field of visual anthropology. Examines the similarities and differences between ethnographic film, critical studies, and written ethnographies. Explores the politics of representing other cultures visually. Cross-listed with ANTH 103.

FVC 105 (E-Z). Film and Media Theory. (4) Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Covers different types of film and media theory. Addresses psychoanalytic film theory and feminist, Marxist, and formalist approaches to the cinema and other media. F. Film Theory and Aesthetics. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 110 (E-Z). Topics in Film and Media History. (4) Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Considers specialized topics in the history of film and the media. Focuses on the sociopolitical and economic implications of the various aspects of film and media. E. The Fifties: Images of American Society in Film; S. Industrial Light and Magic: The Social History of Special Effects. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 135. IntermediateArt, Media, and Culture. (4) Lecture, two hours; screening, six hours. Prerequisite(s): upper-division standing or consent of instructor. A study of performance, photography, video, film, television, installation, and other related "intermedias." Through field trips, screenings, readings, and discussion focuses on artworks within and without the mass media: how they are constructed, written about, analyzed, and viewed in the larger construction of culture. Cross listed with ART 135. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 136. Installation and Site-Specific Art. (4) Lecture, three hours; studio, three hours. Prerequisite(s): consent of instructor. Focuses on production, performance, installation, computer art, video/film, site-specific installation, sculpture, and/or other intermedia. Concentrates on production and analysis of site-specific art through screenings, readings, discussion, and critique. Course is repeatable to a maximum of 8 units. Cross-listed with ART 136.

FVC 139. Mass Media and Popular Culture. (4) Lecture, three hours; discussion, one hour; consultation, one hour. Prerequisite(s): SOC 001 or consent of instructor. A comparative analysis of the television, radio, record, cinema, and journalism industries as social institutions and a discussion of contemporary developments in mass communications theory. A study of the relationship between the social processes of modern society and the content of popular culture. Cross-listed with SOC 139. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

FVC 140. Intermediate Photography. (4) Lecture, two hours; studio, four hours. Prerequisite(s): ART 003 or equivalent. Focuses on projects and assignments to develop individual creative approaches in photography and strengthen controls and techniques in black and white printing. Students are required to furnish their own cameras. Course is repeatable to a maximum of 8 units. Cross-listed with ART 140. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 143 (E-Z). Gender, Sexuality, and Visual Culture. (4) Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive formal, historical, and theoretical analysis of gender and sexuality in film, television, and visual culture. Weekly screenings and readings. E. Feminist Film Theory and Practice; F. Film and Gender; G. Screening the Lesbian. Cross-listed with ENGL 143 (E-Z). This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 144 (E-Z). Race, Ethnicity, and Visual Culture. (4) Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive formal, historical, and theoretical analysis of race and ethnicity in film, television, and visual culture. Weekly screenings and readings. I. Racial Difference and Visual Culture in the Postcolonial World Context; J. Film, Race, and Ideology: The Case of the Vietnam War; K. Decolonizing the Screen. Course is repeatable as topics change. Cross-listed with ENGL 144 (E-Z). This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 145 (E-Z). Special Topics in Film and Visual Culture. (4) Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Intensive formal, historical, and theoretical analysis of a theme or issue in film, media, television, and visual culture. Weekly screenings and readings. E. Mass Culture and Counter Culture; F. Television and American Culture; G. Film as Writing and Writing as Film; I. Liberal Hollywood and Social Problems; J. The Horror Film. Cross-listed with ENGL 145 (E-Z). This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 147. Advanced Photography Workshop. (4) Lecture, two hours; studio, four hours. Prerequisite(s): ART 140/FVC 140; consent of instructor. A study of experimental advanced photographic techniques, including examination of creative and critical problems. Course is repeatable to a maximum of 12 units. Cross-listed with ART 145. This course fulfills the Humanities require-
ment for the College of Humanities, Arts, and Social Sciences.

FVC 150. Intermediate Video Art. (4) W,S Lecture, two hours; studio, four hours. Prerequisite(s): ART 004/FVC 004. Intermediate course in video art production and theory. Designed to continue work done in ART 004/FVC 004. Screenings, readings, and discussions. Advanced editing techniques and theory, storyboard, and sound design. Application of media arts to contemporary art practice and new genres, including installation, documentary, experimental, and performance. Equipment provided. Course is repeatable to a maximum of 8 units. Cross-listed with ART 150. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 160. Intermediate Art Theory. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): ART 006/FVC 006 recommended. Discusses current critical and theoretical issues in modern and contemporary art. Examines student’s art production in light of contemporary art practice and in relation to the interpretation and creation of art inclusive of issues of race, gender, politics, aesthetics, class, and sexuality. Cross-listed with ART 160. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 165A-FVC 165B-FVC 165C. Screenwriting. (4-4-4) Lecture, two hours; discussion, two hours. Prerequisite(s): for CRWT 165A/FVC 165A/THDA 165A: CRWT 056 or consent of instructor; for CRWT 165B/FVC 165B/THDA 165B: CRWT 165A/FVC 165A/THDA 165A or consent of instructor; for CRWT 165C/FVC 165C/THDA 165C: CRWT 165B/FVC 165B/THDA 165B or consent of instructor.

The fundamentals of screenwriting including story development, plotting, and characterization as they are used in creating a complete script for television or feature film. 165A. Introduction. 165B: From outline to first draft. 165C: Rewrites and writing for television formats. CRWT 165A/FVC 165A/THDA 165A is repeatable. Cross-listed with CRWT 165B/FVC 165B/THDA 165B and CRWT 165C/THDA 165C. These courses fulfill the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 170 (E-Z). Dance and Visual Studies. (4) Lecture, three hours; screening, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. Addresses the intersections between the movement arts and their various manifestations in film, video, photography, and other visual media in a given cultural or historical context. 170. Movement Performance, Video/Film, and the Body. F Surrealism and Cinematic Bodies. G Mechanizations of the Body: L. Women’s Cinema and Body Politics, J. Architecture, Film, and Movement Performance, K. European Cinema and Performance, M. Popular Culture, Dance, and MTV. N. Politics of Dance: A Cinematographic Approach. Cross-listed with DANCE 170 (E-Z). This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 172 (E-Z). Topics in Film and Media Genres. (4) Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to a variety of film and media genres and critical approaches to these genres. F Science Fiction and Film, M: Film Melodrama, R. Horror in the Cinema. Cross-listed with CPTL 172 (E-Z). This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 173 (E-Z). International, Independent, and Alternative Cinemas. (4) Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Considers non-Hollywood cinemas in the national, historical, political, and cultural contexts which produced them. E. Experimental and Avant-Garde Film; G. New German Cinema; I. Italian Neorealism; T. Third World Cinema. Cross-listed with CPTL 173 (E-Z). This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 174 (E-Z). Comparative Studies in Film. (4) Lecture, three hours; screening, three hours. Prerequisite(s): upper-division standing or consent of instructor. Considers film in the context of the other arts. Compares the treatment of various themes or problems in film and other media. E. Film and Literature in the Avant-Garde. Cross-listed with CPTL 174 (E-Z). This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 175. Advanced Digital Imaging. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): ART 007/FVC 007. Knowledge of Macintosh interface and Adobe Photoshop. An advanced studio and production course in digital imaging which proceeds from techniques initiated in ART 007/FVC 007. Emphasizes the use of computer and electronic technology as a tool for making art. Addresses issues related to making art and the cultural implications of digital technology through class projects, reading, lectures by visiting artists, field trips, and critiques of work in progress. Course is repeatable to a maximum of 8 units. Cross-listed with ART 170.

FVC 176. History of Photography: Twentieth Century. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. A study of the history of photography and photographic technologies from the turn of the century to the present, with an emphasis on the broad uses of photography in artistic, broadly cultural, and political contexts. Incorporates the resources of the UC Riverside Museum of Photography when possible. Cross-listed with AHS 176.

FVC 177. History of Photography: Nineteenth Century. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. A study of the history of photography from its development in the 1830s to its formulation and application as an artistic medium around 1900. Examines photography in its social and aesthetic contexts, making use of the study collection of photographs and cameras at the UCR/California Museum of Photography when possible. Cross-listed with AHS 174.

FVC 184. Japanese Film and Visual Culture. (4) Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates popular visual culture in Japan primarily through film, from the early masters to contemporary directors. Additional material may be drawn from fields such as theater, cinema, contemporary visual art, architecture, and illustrated fiction. All materials read or viewed in English. Course is repeatable to a maximum of 12 units. Cross-listed with AST 184, CPTL 184, and JPN 184.

FVC 185. Film, Video, and Art: Theories and Histories. (4) Lecture, three hours; screening, three hours. Prerequisite(s): AHS 017C or upper-division standing or consent of instructor. Covers the intersection of film and art in twentieth-century culture. Addresses the relationship between painting, photography, video, and film in Euro-American and non-Western art. Studies films about art and artists and examines histories of “art” or avant-garde films. Cross-listed with AHS 186. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

FVC 190. Special Studies. (1-4) Consultation, one hour; individual study, three to six hours; term paper or project, one to three hours. Prerequisite(s): upper-division standing consent of instructor and Film and Visual Culture Chair. Individual study, directed by a faculty member, to meet special curricular needs. A final paper or creative project is required. Course is repeatable to a maximum of 12 units.

FVC 198-I. Individual Internship in Film and Visual Culture. (1-4) Consultation, one hour; internship, two to eight hours; individual study, one to three hours; term paper, one to three hours. Prerequisite(s): upper-division standing consent of instructor and Film and Visual Culture Chair. An internship in a professional organization or with an individual to gain skills and experience for a career in the visual media. A final paper or a creative project is required. Course is repeatable to a maximum of 12 units.

GENETICS

Bradley Hyman, Ph.D., Director
Program Office, 1151 Batchelor Hall
(800) 735-0717 or (909) 787-5913
http://molecular-evolutionary-genetics.ucr.edu

Professors
Nancy E. Beckage, Ph.D. (Entomology) Cell Biology and Neuroscience
Michael T. Clegg, Ph.D. (Botany and Plant Sciences)
Donald A. Cooksey, Ph.D. (Plant Pathology)
Darleen A. DeMason, Ph.D. (Botany and Plant Sciences)
J. Allan Dodds, Ph.D. (Plant Pathology)
Achilles Dugaiczyk, Ph.D. (Biochemistry)
Brian A. Federici, Ph.D. (Entomology)
Daniel R. Gallie, Ph.D. (Biochemistry)
Sarjeet S. Gill, Ph.D. (Cell Biology and Neuroscience)
Anthony E. Hall, Ph.D. (Botany and Plant Sciences)
Anthony H. C. Huang, Ph.D. (Botany and Plant Sciences)
Bradley C. Hyman, Ph.D. (Biological Sciences)
Noel T. Keen, Ph.D. (Plant Pathology)
Elizabeth M. Lord, Ph.D. (Botany and Plant Sciences)
Leonard P. Nunney, Ph.D. (Botany and Plant Sciences)
Mikael L. Roose, Ph.D. (Botany and Plant Sciences)
Neal L. Schiller, Ph.D. (Biomedical Sciences)
Curricula and Courses

Associate Professors
- Peter W. Atkinson, Ph.D. (Entomology)
- Julia N. Bailey-Serres, Ph.D. (Botany and Plant Sciences)
- Elizabeth A. Bray, Ph.D. (Botany and Plant Sciences)
- Timothy J. Close, Ph.D. (Botany and Plant Sciences)
- David A. Eastmond, Ph.D. (Cell Biology and Neuroscience)
- Andrew J. Grosofsky, Ph.D. (Cell Biology and Neuroscience)
- Howard S. Judgeon, Ph.D. (Plant Pathology)
- A.L.N. Rao, Ph.D. (Plant Pathology)
- Frances M. Siadek, Ph.D. (Cell Biology and Neuroscience)
- Mark S. Springer, Ph.D. (Biology)
- Linda L. Walling, Ph.D. (Botany and Plant Sciences)
- Shizhong Xu, Ph.D. (Botany and Plant Sciences)

Assistant Professors
- Alan D. Aguillnick, Ph.D. (Biology)
- Ispolui Koleshian, Ph.D. (Nematology)
- Xuan Liu, Ph.D. (Biochemistry)
- Dmitri A. Maslov, Ph.D. (Biology)
- Rajesh K. Mehra, Ph.D. (Botany and Plant Sciences)
- Patricia S. Springer, Ph.D. (Botany and Plant Sciences)
- Zhenbiao Yang, Ph.D. (Botany and Plant Sciences)

The Genetics Graduate Group (GGG) is an interdepartmental program that includes faculty from the departments of Biochemistry, Biology, Botany and Plant Sciences, Cell Biology and Neuroscience, Entomology, Nematology, and Plant Pathology, as well as the Division of Biomedical Sciences. The GGG administers a program leading to the Doctor of Philosophy in Genetics. Two fields of specialization (subdisciplines) offered by the program are molecular/cellular genetics or evolutionary/population genetics. The program is structured to allow maximum flexibility in the design of an individual student course program and research goals. A primary objective is to allow students to develop a capability in research as rapidly as possible, consistent with the student’s initial preparation.

Students are expected to meet all general requirements of the Graduate Division as printed in the Graduate Studies section of this catalog. Submission of Graduate Record Examination Test scores (verbal, quantitative, and analytical) is mandatory for admission. Applicants with any Bachelor of Science or Arts degree and an adequate background in the biological and physical sciences will be considered. A minimum background should include courses in elementary biochemistry (1 quarter), biology (1 year), elementary genetics (1 quarter), general chemistry (1 year), organic chemistry (2 quarters), calculus (2 quarters), and statistics (1 quarter). The GGG evaluates applications on a continual basis from October to May. However, the GGG normally considers applications for teaching and research assistantships at the same time as fellowships; therefore, students are strongly encouraged to complete their applications for admission and support as early as possible. Normally fellowships are awarded in January for students entering the following fall quarter.

Doctoral Degree

All students choose a subdiscipline for specialization (either molecular/cellular genetics or evolutionary/population genetics). Specific course requirements are selected on the basis of the subdiscipline and the student’s particular needs and objectives. The Ph.D. is a research degree, and, accordingly, the goal of the program is to train students in the theoretical and experimental foundations of modern genetics. Students are encouraged to participate in research work early in their training. Each student is required to have at least one quarter of teaching experience. This requirement may be satisfied by serving as a teaching assistant in a genetics-related course.

The normative time to degree for the doctorate is 15 quarters.

HISPANIC STUDIES

<table>
<thead>
<tr>
<th>Subject abbreviations: SPN and PORT</th>
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<tbody>
<tr>
<td>W. William M. Megenney, Ph.D., Chair</td>
</tr>
<tr>
<td>Department Office, 2402 Humanities and Social Sciences</td>
</tr>
<tr>
<td>(909) 787-3746 x1421</td>
</tr>
</tbody>
</table>

**Professors**
- Ana Maria Fagundo, Ph.D.
- William W. Megenney, Ph.D.
- James A. Parr, Ph.D.
- Marina Pianca, Ph.D.
- Raymond L. Williams, Ph.D.

**Professors Emeriti**
- Cándido Ayllón, Ph.D.
- Missioa Playán, Ph.D.

**Associate Professors**
- Xuan Liu, Ph.D. (Biochemistry)
- Alan D. Agulnick, Ph.D. (Biology)
- Frances M. Sladek, Ph.D.
- Andrew J. Grosofsky, Ph.D. (Botany and Plant Sciences)
- David A. Eastmond, Ph.D. (Cell Biology and Neuroscience)
- Teresa Toscano, Ph.D.
- Philip O. Gericke, Ph.D.
- Hugo Rodríguez-Acáiz, Ph.D., Jur.D.

**Assistant Professors**
- Raymond L. Williams, Ph.D.
- Ana María Fagundo, Ph.D.
- J. Giles Waines, Ph.D.
- William W. Megenney, Ph.D.
- Ana María Fagundo, Ph.D.
- Cándido Ayllón, Ph.D.

**Lecturers**
- Luis H. Paredes, Ph.D.
- Teresa Toscano, Ph.D.

MAJOR

The Department of Hispanic Studies offers a Bachelor of Arts degree in Spanish. A student may major in Spanish by specializing in one of two undergraduate areas offered by the department: the Literature Option or the Linguistics Option. The Literature Option is intended for students who are primarily interested in a liberal arts education in general and literary studies in Spanish in specific. Literature Option students can pursue high school teaching, graduate study in Latin American or Spanish literature, or other professional careers, as well as advanced study. The Linguistics Option is designed for students who are especially interested in the Spanish language or Hispanic linguistics. Students follow this option as preparation for elementary, middle school, or high school language teaching, as a second major in fields where bilingualism is useful, and as preparation for advanced study in Hispanic linguistics. Both the Literature Option and the Linguistics Option should be considered for a double major, particularly with majors such as Latin American Studies, English, Classics, French, and Linguistics.

Degree Requirements

University Requirements

See the Undergraduate Studies Section for requirements that all students must satisfy.

College Requirements

See [Degree Requirements](http://www.ucr.edu/CHSS/depts/spanport/spanhome.html) for requirements that students must satisfy.

Major Requirements

The major requirements for the B.A. degree in Spanish are as follows.

Option Requirements — Choose one option

**Literature Option**

Upper-division requirements (44 units)
1. SPN 101A-SPN 101B or SPN 109A-SPN 109B
2. SPN 110 (prerequisite for all upper-division literature courses)
3. Eight (8) units from SPN 120A-SPN 120B-SPN 120C
4. Twelve (12) units from the following survey courses. SPN 180A-SPN 180B or SPN 181A-SPN 181B
5. Eight (8) additional units of Spanish or Latin American literature
6. Four (4) units to be chosen from SPN 102A or SPN 102B

**Linguistics Option**
Upper-division requirements (44 units)
1. SPN 101A-SPN 101B or SPN 109A-SPN 109B
2. SPN 105 and SPN 106A-SPN 106B
3. SPN 110 (prerequisite for all upper-division literature courses)
4. Four (4) units from SPN 120A-SPN 120B-SPN 120C
5. Four (4) units from SPN 102A-SPN 102B
6. Twelve (12) units of upper-division electives in Spanish

**Minor**
The Department of Hispanic Studies offers a minor in Spanish with the following requirements.
1. SPN 101A and SPN 101B or SPN 109A and SPN 109B
2. SPN 102A or SPN 102B
3. SPN 110
4. Eight (8) units from SPN 120A, SPN 120B, SPN 120C, SPN 105, SPN 106A

See **Minors** under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

**Portuguese**
The Department of Hispanic Studies offers Portuguese language classes according to student demand and the availability of the faculty. Attention is directed to the Education Abroad Programs in Rio de Janeiro, and Brazil. Contact International Services at (909) 787-4113.

**Education Abroad Program**
The Department of Hispanic Studies encourages eligible students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity for the student to be immersed in the languages and culture of the Hispanic world while earning units toward graduation. Students are advised to plan such study abroad well in advance in order to assure that the courses taken abroad fit the overall program for the major and for timely graduation. Consequently, it is important for Spanish majors to consult with their faculty advisor and the Student Affairs Officer well in advance of study abroad.

Students are advised to consult about programs in Spain (Alcalá, Barcelona, Granada, and Madrid) and in Latin America (Brazila, Chile, Costa Rica, Ecuador, and Mexico). For further details, see Education Abroad Program in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

**GRADUATE PROGRAM**
The graduate program in Spanish is designed to prepare scholars for teaching and research in Spanish and Latin American literatures. As such, it is organized primarily for students seeking the Ph.D. degree, although the M.A. degree is awarded in the course of a student's progress. A small number of students are admitted who intend to complete the M.A. only as advanced study for teaching in high schools or community colleges.

All domestic applicants to the graduate programs must supply Graduate Record Examination scores for the verbal, analytical, and quantitative tests.

**Master's Degree**
The Department of Hispanic Studies offers comprehensive coverage of the literatures of Spain and Latin America from their origins through the contemporary period. The M.A. in Spanish is designed for students who hold the B.A. in Spanish, to broaden their knowledge of Hispanic literary traditions through advanced study, and it is designed primarily for students who intend to pursue the Ph.D. at UCR. As part of their study of Hispanic literary traditions, students are introduced to advanced concepts of literary theory, and have the option of taking seminars in areas such as Hispanic linguistics, Brazilian literature, and the theory and practice of creative writing. In addition to these Ph.D. students, a select number of students pursue the M.A. to improve their training as teachers in high schools and community colleges.

Applicants for admission normally have a B.A. in Spanish that includes at least five courses in Spanish and Latin American literature. Most students in the program are Teaching Assistants in the Department of Hispanic Studies; their normal workload includes language teaching and taking three graduate courses per quarter. Teaching Assistants receive training in language instruction as part of their graduate study and teaching duties (and are required to take a teaching methods course during their first quarter of assuming their duties as Teaching Assistants).

Candidates for the M.A. complete a minimum of 48 graduate units in literature or linguistics, with at least five graduate courses in Spanish Peninsular literature and at least five courses in Latin American literature. (In addition to Spanish and Latin American literature, students may fulfill their 48-unit requirement by taking courses in Linguistics or Comparative Literature.)

Near the end of this two-year program (at the end of the fifth quarter and beginning of the sixth quarter), students take a four-hour written examination, followed by a one-hour oral examination administered one or two weeks after the written examination. This M.A. Examination (written and oral) is based on the texts on the M.A. reading list and course work. The M.A. reading list consists of approximately 60 major works of Spanish and Latin American literatures.

Candidates must demonstrate a reading knowledge of another foreign language by one of three methods: 1) satisfactory completion of a graduate course in Brazilian literature offered in the Department of Hispanic Studies; 2) satisfactory completion of an upper-division literature course in the target language; 3) satisfactory completion of a departmental foreign language exam.

**Doctoral Degree**
The Department of Hispanic Studies offers the doctorate in Spanish to train candidates to assume academic positions as scholars and teachers. Departmental strengths for this training lie in the areas of the literature of the twentieth century in Latin America, the literature of the twentieth century in Spain, and the literature of the Spanish Golden Age. Our faculty also offer courses in literary theory, Latin American cultural studies, and the theory and practice of creative writing. The normative time to completion of the Ph.D. degree, after the M.A., is nine quarters. The normative time to the completion of the Ph.D. after the B.A. is 15 quarters.

**Admission requirements**: Students admitted with the M.A. from other institutions are required to take an examination at the end of the first year for diagnostic purposes. Candidates who hold the M.A. from UCR must be recommended by the faculty to continue for the Ph.D.

**Minimum course requirements**: There is a minimum course requirement of 24 units beyond the M.A. In practice, doctoral students usually find that more than the minimum is advisable for doctoral training.

**Long paper**: As part of their preparation in their major area of specialization, students
present a paper of 40 to 50 pages in length, representing scholarly research and analysis in their chosen field of study. The long paper will form the basis of the doctoral dissertation.

Qualifying examinations. Students choose two areas of concentration as examination areas. One area of Spanish Peninsular literature and one area of Latin American literature must be chosen from among the five areas of concentration:
1. Spanish Golden Age
2. Spanish eighteenth and nineteenth centuries
3. Spanish twentieth century
4. Latin American Colonial to nineteenth century
5. Latin American twentieth century

The area of specialization is defined by the long paper and dissertation topic. The doctoral examination consists of a four-hour written examination (two hours in each area of concentration), followed by an oral examination of approximately two hours. The oral examination deals with the two areas of concentration and the long paper. The written and oral examinations are conducted by the qualifying committee nominated by the chair in consultation with the student and appointed by the Graduate Dean. Upon the successful completion of the written and oral qualifying examinations, the student is recommended to the Graduate Dean for advancement to candidacy.

Language requirements. In addition to Spanish and English, the candidate must demonstrate a reading knowledge of one other language. Students specializing in Latin American literature are required to select Portuguese as this language. This requirement may be fulfilled by departmental examination or by satisfactory completion of one Brazilian literature class.

Dissertation. A dissertation presented as prescribed by the Graduate Division is prepared under the direction of the candidate’s dissertation committee.

Final examination. After completion of the dissertation, the candidate is examined by the dissertation committee. This examination will normally take the form of a public presentation by the candidate followed by questions from the committee.

SPANISH

LOWER-DIVISION COURSES

SPN 003. Elementary Spanish. (4)
Lecture, two hours; discussion, two hours. Prerequisite(s): student is required to take Spanish placement examination. An introduction to the sound system and grammar of Spanish, with attention to the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in Spanish and in English as possible. Audio-lingual and computer-based learning materials are available in the language laboratory.

SPN 002. Elementary Spanish. (4)
Lecture, two hours; discussion, two hours. Prerequisite(s): SPN 001 or equivalent. An introduction to the sound system and grammar of Spanish, with attention to the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in Spanish and in English as possible. Audio-lingual and computer-based learning materials are available in the language laboratory.

SPN 003. Elementary Spanish. (4)
Lecture, two hours; discussion, two hours. Prerequisite(s): SPN 002 or equivalent. An introduction to the sound system and grammar of Spanish, with attention to the development of the four skills: understanding, speaking, reading, and writing. Classes conducted in Spanish and in English as possible. Audio-lingual and computer-based learning materials are available in the language laboratory.

SPN 004-SPN 005-SPN 006. Intermediate Spanish. (4-4-4)
Lecture, two hours; discussion, two hours. Prerequisite(s): SPN 003 or equivalent for SPN 004, SPN 004 or equivalent for SPN 005, SPN 005 or equivalent for SPN 006. A comprehensive review of the basic grammatical structures of Spanish, vocabulary building, development of conversation and composition skills, readings of literary and social interest. Classes conducted in Spanish.

SPN 025A-SPN 025B-SPN 025C. Conversation. (2-2-2)
Lecture, three hours. Prerequisite(s): SPN 006 or equivalent. A course in beginning conversation stressing the acquisition of an active control of Spanish. Oral comprehension and verbal communication will be emphasized.

SPN 027A-SPN 027B. Intermediate Oral and Written Composition. (2-2)
Discussion, two hours. Prerequisite(s): SPN 006 or consent of Chair of Hispanic Studies Department. The acquisition of an active command of Spanish, with emphasis on various writing skills.

SPN 090. Special Studies. (1-3)
To be taken with the consent of the Chair of the Department as a means of meeting special curricular problems. Course is repeatable.

UPPER-DIVISION COURSES

SPN 101A-SPN 101B. Advanced Oral and Written Composition. (4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): for SPN 101A: SPN 006; for SPN 101B: SPN 101A. A series intended for nonnative speakers to practice speaking and writing in Spanish, and to review basic grammar. Strong emphasis on composition and editing. Class is conducted in Spanish. Natives speakers without knowledge of college-level grammar should take SPN 109A. Credit is awarded for only one of SPN 101A or SPN 109A and only one of SPN 101B or SPN 109B.

SPN 102A. Introduction to Spanish Culture and Civilization. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): SPN 006. Introduction to Spanish culture and civilization from the Roman times to the present.

Readings cover history, art, architecture, literatures, and other aspects of culture and civilization. Provides background for courses on the literature of Spain. Course is taught in Spanish. Credit is awarded for only one of EUR 117A-EUR 117B-EUR 117C or SPN 102A.

SPN 102B. Introduction to Latin American Culture and Civilization. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): SPN 006. Introduction to Latin American culture and civilization from pre-Columbian times to the present. Emphasis is on the period from post-Columbian independence to the present. Readings cover history, art, architecture, literatures, and other aspects of culture and civilization. Provides background for courses on the literature of Latin America. Course is taught in Spanish. Credit is awarded for only one of LNST 118A-LNST 118B or SPN 102B.

SPN 105. The Phonology of the Spanish Language. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): LING 020, SPN 101A-SPN 101B or SPN 109A-SPN 109B. A descriptive and normative analysis of the phonological system of the Spanish language, with attention given to the phonetic characteristics of contemporary peninsular and Hispano American Spanish.

SPN 106A-SPN 106B. Structure of the Spanish Language. (4-4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): for SPN 106A: SPN 105; for SPN 106B: SPN 106A. An introduction to descriptive and applied techniques in the phonology, morphology, morphophonemics, and syntax of the Spanish language as found in Spain and Spanish America.

SPN 108. Hispanic Dialectology. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): SPN 106B. Provides an overview of the dialects of Spanish, with an emphasis on those of Spanish America. Students apply the principles of dialectology to field work and conduct linguistic analyses of the speech of selected geographic areas.

SPN 109A-SPN 109B. Spanish for the Native Speaker. (4-4)
Lecture, three hours; individual study, three hours. Prerequisite(s): for SPN 109A: a sufficiently high test score on the Spanish placement examination, as determined by the Hispanic Studies faculty; for SPN 109B: SPN 109A. Designed for the native speaker with little or no experience with Spanish grammar and composition. Emphasis is on basic grammar, written accents, orthography, and composition. The class is conducted in Spanish. Credit is awarded for only one of SPN 109A or SPN 109B and only one of SPN 109B or SPN 109B.

SPN 110. Introduction to Literary Criticism and Analysis. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): SPN 101A-SPN 101B or SPN 109A-SPN 109B. An introduction to the methods and techniques of literary analysis. Practice in textual explication, with regular writing assignments.

SPN 111 (E-Z). Hispanic Literature in Translation. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Reading and discussion of works of major Spanish and Spanish American writers. Topic will vary from quarter to quarter. F: Latin American Literature and Film; M: Masterpieces in Spanish American Modernism; Q: Don Quijote. R: The Theatre of the Spanish Golden Age; T: Latin American Theatre in Translation; W: Women in Latin American Literature. No knowledge of Spanish
required. May be counted toward the Spanish major with consent of instructor.

**SPN 120A-SPN 120B-SPN 120C. Masterpieces of Hispanic Literature. (4-4-4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): SPN 110. Reading and analysis of major texts of Latin American and Spanish literature. 120A. Short texts of modern authors from Spain and Latin America. 120B: Major texts of authors from Spain. 120C: Major texts of authors from Latin America.

**SPN 121 (E-Z). Hispanic Thought: Major Essays. (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): SPN 110. A study of major essays, with emphasis on the modern period. E. Three Twentieth-Century Latin American Essaysists.

**SPN 140 (E-Z). Renaissance and Baroque Literatures. (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): SPN 110. A concentrated study of a genre, movement, author, or outstanding work of Spanish literature of the sixteenth or seventeenth century. E. Renaissance and Baroque Literature. H. La Celestina; J. Golden Age of Poetry; P. La Novela Picaresca; T. Spanish Theatre of the Golden Age.

**SPN 141. Cervantes. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): SPN 110. An overview of Cervantes’ texts within their time and place; discussion of his importance in the development of the novel; and close reading of Don Quixote.

**SPN 142. Continuities of the Spanish Golden Age in Modern Latin America. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): SPN 110. Introduces the relationship of key golden age and Spanish colonial texts to modern Latin American narrative and essay. Explores questions of literary genealogy as well as issues of cultural identity and the reclamation of history.

Lecture, three hours; consultation, one hour. Prerequisite(s): SPN 110. A concentrated study of a genre, movement, author, or outstanding work of this period. Topics vary each time course is offered. E. The Spanish Essay; F. Naturalism in Spanish Prose; G. Nineteenth-Century Literature.

**SPN 155. The Generation of 1898. (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): SPN 110. A study of the major writers constituting the generation emerging from the national conflict produced in Spain as a consequence of the defeat in the Spanish American War. Readings and discussion of essays, fiction, and poetry of writers such as Unamuno, Baroja, Valle-Inclán, Antonio Machado, Azorín, and Benavente.

Lecture, three hours; extra reading, three hours. Prerequisite(s): SPN 110. A concentrated study of a genre, period, author, or outstanding work of twentieth-century Spanish literature. E. Spanish Poetry; N. Contemporary Novel in Spain; T. Contemporary Theatre in Spain.

**SPN 163. Spanish Poetry of the Twentieth Century. (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): SPN 110. A study of the major poets of the twentieth century, from the Generation of 1898 to the postwar period. All reading and writing is in Spanish.

Lecture, three hours; outside research, three hours. Prerequisite(s): SPN 110. A concentrated study of a genre, movement, author, or outstanding work of Latin American Literature. E. Short Story; F. Essay; G. Anti-Censorship; H. Nineteenth-Century Latin American Novel; M. Twentieth-Century Latin American Novel; N. Mexican Novel; P. Poetry; R. Voyages through Latin America. A. Cultural and Literary History; T. Spanish American Theatre.

**SPN 180A. Survey of Spanish Literature, Middle Ages-1699. (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): SPN 110; concurrent or previous enrollment in SPN 120A or SPN 120B. Survey of literary movements and trends and major writers of medieval and Golden Age Spanish literature. Covers writers such as Cervantes, Lope de Vega, Tirso de Molina, Quevedo, and Góngora.

**SPN 180B. Survey of Spanish Literature, 1700-Present. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): SPN 110; concurrent or previous enrollment in SPN 120A or SPN 120B. Survey of literary movements and trends and major Spanish American writers of the colonial period and the nineteenth century. Readings in fiction, poetry, drama, and essay. Covers writers such as Moratín, Bécquer, Galdós, Larra, Azorín, and García Lorca.

**SPN 181A. Survey of Spanish American Literature, 1492-1899. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): SPN 110; concurrent or previous enrollment in SPN 120A or SPN 120C. Survey of literary movements and trends and major Spanish American writers of the colonial period and the nineteenth century. Readings in fiction, poetry, drama, and essay. Covers writers such as Sor Juana Inés de la Cruz, Echeverría, Sarmiento, Martí, and Dario.

**SPN 181B. Survey of Spanish American Literature, 1900-Present. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): SPN 110; concurrent or previous enrollment in SPN 120A or SPN 120C. Survey of literary movements and trends and major Spanish American writers of the twentieth century. Readings in fiction, poetry, drama, and essay. Covers writers such as Azuela, Vallejo, Huidobro, García Márquez, Fuentes, Paz, Buenaaventura, and Elena Poniatowska.

**SPN 188 (E-Z). Interdisciplinary Studies: Latin America. (4)**
Seminar, three hours; outside research, three hours. Prerequisite(s): SPN 110. Reading, research, and discussion on particular Latin American problems that lend themselves to interdisciplinary analysis.

**SPN 190. Special Studies. (1-5)**
Individual study, three to fifteen hours. Prerequisite(s): SPN 110; consent of Department Chair. Individual study, directed by a faculty member, to meet special curricular needs. Course is repeatable.

**SPN 192. Tutorial Activities. (2)**
Activity, six hours. Prerequisite(s): SPN 110; senior standing consent of Department Chair. Under faculty supervision, students conduct discussion sections of elementary Spanish courses. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 6 units.

**SPN 199H. Senior Honors Research. (1-5)**
Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): graduate standing. Historical and theoretical evolution of Spanish linguistics as a scholarly discipline. Major topics will include perennial problems, schools, and history of linguistics.

**SPN 207. History of the Spanish Language. (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing; SPN 105, SPN 106A-SPN 106B, or equivalents. The development of the Spanish language from its origins to modern times.

**SPN 208. Linguistic Approaches to Literature. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): graduate standing. Presentation and discussion of semantics, speech acts, and speech genres, and discourse analyses in the framework of contemporary linguistic studies. Topics of inquiry include speech act theory, fiction and nonfiction discourse, pragmatics, syntax, frames of reference, and narrative tones. Other linguistic levels (i.e., phonology, morphology) are also discussed.

**SPN 209. Ethnolinguistic Analysis of Afro-Latin American Culture. (4)**
Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): graduate standing. Historical analysis of the Atlantic slave trade. Examines the formation of creole languages in Latin America and their impact on contemporary Latin American languages and culture.

**SPN 220. Criticism and Critical Documentation. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): graduate standing. Strategies of reading and analysis from formalism and new criticism through structuralism, deconstruction, and new historicism, with attention to Anglo-American contributions and the humanistic heritage. Practice in MLA documentation. Required for the Ph.D.

**SPN 225A-SPN 225B-SPN 225C. A History of Spanish Literature. (4-4-4)**
Lecture, three hours. Prerequisite(s): graduate standing. A systematic study of the major works of Spanish literature from the middle ages to the contemporary period.

**SPN 226A-SPN 226B-SPN 226C. A History of Spanish American Literature. (4-4-4)**
Lecture, three hours. Prerequisite(s): graduate standing. A systematic study of the major works of Spanish American literature from the colonial period to the present.

**SPN 251. Seminar in the Literature of the Middle Ages and Early Renaissance. (4)**
Seminar, three hours; consultation, one hour. Prerequisite(s): graduate standing. Intensive study of selected topics in Spanish literature through the fifteenth century. Topics may vary. May be repeated for credit.
SPN 253. Seminar in Spanish Linguistics. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing. SPN 207. An in-depth study of a selected problem of synchronic or diachronic Spanish linguistics which has developed in areas such as phonology, morphology, syntax, semantics, and pragmatics. Course is repeatable to a maximum of 12 units.

SPN 257. Seminar in Hispanic Civilization. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing and the appropriate course from EUR 117A-EUR 117B-EUR 117C or LNSF 118A-LNSF 118B. Intensive study of special topics in Hispanic civilization. Topics vary. Course is repeatable to a maximum of 12 units.

SPN 259 (E-Z). Genres of Hispanic Literature. (4)
Seminar; three hours; individual study three hours.
Prerequisite(s): graduate standing. Close reading, analysis, and discussion of the main Hispanic texts, plays, and poems. E. Hispanic Literature and the Art of Poetry.

SPN 261 (E-Z). Studies in Golden Age Literature. (4)
Seminar; three hours; consultation, one hour. Prerequisite(s): graduate standing. Intensive study of topics in Spanish literature of the sixteenth and seventeenth centuries. G. The Spanish Comedia, I. Spain and the Western Tradition.

SPN 262. Seminar in Don Quijote. (4)
Seminar; three hours; outside research, three hours.
Prerequisite(s): graduate standing. Critical and theoretical perspectives on Cervantes’ masterpiece; assumes prior close reading of the text. Emphasis on narratology and genre, pointing toward a deconstructive/reconstructive reading.

SPN 264. Seminar in Spanish Literature of the Nineteenth Century. (4)
Seminar; three hours; consultation, one hour.
Prerequisite(s): graduate standing. Study of a genre, movement, or outstanding author of this period. Topics may vary. May be repeated for credit.

SPN 269 (E-Z). Studies in Twentieth-Century Spanish Literature. (4) F
Seminar; three hours; consultation, one hour. Prerequisite(s): graduate standing. Study of authors, movements, or genres from the Generation of ’98 to the present. E. Spanish Poetry: the Avant-Garde and the Generation of ’27.

SPN 270 (E-Z). Latin American Literature. (4)
Seminar; three hours; consultation, one hour.
Prerequisite(s): graduate standing. Study of the main authors and schools in Latin American literature. K. The Mexican Novel; O. The Modern Novel in Colombia; Q. The Postmodern Novel in Latin America (1968-Present); T. Latin American Theatre: Sixteenth through Twentieth Centuries; Y. The Latin American Avant-Garde. Segments are repeatable.

SPN 272. Seminar in the Literature of the Specific Latin American Country. (4)
Seminar; three hours; consultation, one hour.
Prerequisite(s): graduate standing. The in depth study of the most important literary achievements of a single country such as Mexico, Argentina, Chile, or Peru, varying each time the course is offered. May be repeated for credit.

SPN 275. Seminar in Literary Criticism. (4)
Seminar; three hours.
Prerequisite(s): graduate standing.

SPN 276. The “Negative Sublime” in the Americas. (4)
Seminar; three hours; extra reading, three hours.
Prerequisite(s): graduate standing. Examines texts of para-noia, cognitive dissonance, and cultural anxiety within their specific North and South American contexts. Explores issues of personal and national identity and of family romance as well as the satirical genre in historical perspective. Includes relevant theory.

SPN 290. Directed Studies. (1-6)
Prerequisite(s): graduate standing. A program of studies designed to advise and assist candidates who are preparing for examinations. Open to M.A. and Ph.D. candidates. Does not count toward the unit requirement for the M.A. To be graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SPN 291. Individual Studies in Coordinated Areas. (1-6)
Variable hours. Prerequisite(s): graduate standing. A program of studies designed to advise and assist candidates who are preparing for examinations. Open to M.A. and Ph.D. candidates. Does not count toward the unit requirement for the M.A. To be graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SPN 292. Concurrent Analytical Studies. (2)
Research, six hours. Prerequisite(s): consent of instructor; concurrent enrollment in SPN 100-series course. To be taken on an individual basis. Student will complete a graduate paper based on research related to the SPN 100-series course. May be repeated with different topic. SPN 101A-SPN 101B, SPN 105, SPN 106-SPN 106B, SPN 120A-SPN 120B, SPN 120C may not be used for SPN 292.

SPN 299. Research for Thesist or Dissertation. (1-12)
Prerequisite(s): graduate standing. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PROFESSIONAL COURSES

SPN 301. Teaching Spanish at the College Level. (2)
Seminar, two hours. Prerequisite(s): graduate standing. Theories of language and language acquisition which underlie modern methods of Spanish language teaching at the college level. Practical experience in grading, test construction, lesson planning, teaching techniques, effective aspects of teaching, and creativity in teaching. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SPN 302. Teaching Practicum. (1-4)
Pacticum. Four to eight hours; discussion, one hour. Prerequisite(s): LTITG 301 or equivalent; graduate standing; employment as Teaching Assistant or Associate. Supervised teaching in lower-division courses. Required of all teaching assistants in Spanish. Fulfills teaching portion of Ph.D. requirement. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PORT 101. Intensive Brazilian Portuguese for Speakers of Spanish. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): SPN 101A or equivalent. An introduction to Brazilian Portuguese grammar structured for those possessing knowledge of Spanish. Emphasis is on comparing and contrasting grammatical constructions. Examples are taken from Brazilian literature.

PORT 162 (E-Z). Survey in Brazilian Fiction. (4)
Lecture, three hours; consultation, one hour.
Prerequisite(s): PORT 004 or consent of instructor. Reading and analysis of selected works of major Brazilian prose writers. Topics may vary each time course is offered. E. Jorge Amado and Machado de Assis; F. Graciliano Ramos, Rego, Queiroz, Azevedo, Amado; G. Veríssimo, Amado. Course to be taught in the original language.

PORT 190. Special Studies. (1-5)
Variable hours. Prerequisite(s): consent of chair of the department. Course is repeatable.

PORT 201. Brazilian Literature. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): graduate standing. A survey of Brazilian literature from the colonial period to present, including chronicles, poetry, the short story, and the novel. Selected works from the several historical literary periods are read and analyzed. All readings and lectures are done in Portuguese; class discussion and examinations may be done in Portuguese, Spanish, or English.

PORT 202. The Brazilian Novel. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): graduate standing. Reading and discussion of selected Brazilian novels from the nineteenth and twentieth centuries, with emphasis on the most important authors (e.g., Joaquim Manuel de Macedo, Aluísio Azevedo, Machado de Assis). Reading and lectures are in Portuguese; class discussion is in Portuguese, Spanish, or English.

PORT 001-PORT 003. Elementary Portuguese. (4-4-4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): none for PORT 001; PORT 001 or equivalent for PORT 002; PORT 002 or equivalent for PORT 003.
History plays a central role in general education for all undergraduate students. History stresses an understanding of changes that take place in society over time. It also provides a meaning to the past that has many implications for the future. Since we learn from experience, through history we can greatly broaden our learning through the experience of others, removed in time and distant in space from our immediate world. The study of history is as useful as it is fascinating. History majors develop an ability to communicate well, both orally and in writing, and the capacity to think clearly and analytically. Whatever one's goals, it makes good sense to include history in any degree program.

The History Department offers a Bachelor of Arts degree in History, as well as B.A. degrees in History/Administrative Studies and in History/Law and Society.

Career Opportunities

Since history stresses change over time and provides the tools for comprehending better a rapidly changing world, many of those planning graduate work find history an excellent preparation for professional schools such as law and business administration. For those planning a legal career, a strong background in Western institutions and values can be obtained in a variety of courses in the Department. Those planning a career in public school teaching should be aware that the Department's program has been officially approved under the Ryan Act for the elementary (multiple-subject) credential program, which exempts graduates from the statewide examinations required in this field. And, of course, a major in history prepares the student for graduate study in this field as well as a broad range of general careers in business, government work and foreign affairs that ask for written and verbal skills developed in the major.

History/Administrative Studies Major

The History/Administrative Studies major is designed to combine the discipline of History, with its emphasis on changes in society over time, with the study of administrative behavior, the development of public policy, and the tools of decision making. The addition of an Administrative Studies component provides History majors with analytical administrative skills as well as familiarity with the theories and policies of public administration. The concepts of organizational behavior and decision making, when combined with the perspectives provided through the History major, ought to be of particular value to those planning to enter careers in business, federal, state, or local levels of public or private administration, government work or to those planning to attend a professional school of administration or those utilizing the major in a variety of positions in the public or private sector. (See also the History program in Historic Resources Management, which outlines public sector careers in History.)

History/Law and Society Major

The History/Law and Society major is designed to offer students the opportunity to combine the study of history, with its emphasis on the changes over time in society, politics, the economy, and culture, with the study of legal and law-like relationships and institutions. The coherent series of courses included in this major ought to be of particular value to those intending to study law or to enter other graduate fields as well as to those planning professional careers in government, public administration, business, or other areas where the relationship between history and the law is of significance.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The History Department offers a B.A. degree in History, History/Administrative Studies, or History/Law and Society.

History Major

In order to receive a B.A. degree in History, students must take 48 units (12 courses). At least eight units (2 courses) must be at the lower-division level; at least 36 units (9 courses) must be at the upper-division level.

Majors must take:
1. At least one World History course and at least one other lower-division course
2. At least four courses in one of the following areas of concentration, including a seminar (HIST 191 E-Z):
   - Ancient and Medieval Europe
United States
Latin America
Asia and Africa

Please note that the seminar HIST 191 (E-Z) is required and must be taken in the student's area of concentration.

3. At least four courses in at least three other of the above fields.

Students who choose United States as their area of concentration are strongly advised to take HIST 017A-HIST 017B as preparation for upper-division courses in American history.

Lower-division courses taken elsewhere may be counted toward the lower-division requirement, and advance placement units earned in high school may count toward its fulfillment as well. Please consult with the Student Affairs Officer for further details.

Each History major is urged to consult with the Student Affairs Officer for quarterly advising and to meet with the Undergraduate Advisor at least one time each year. Appointments can be made through the Student Affairs Officer.

**History/Administrative Studies Major**

The major requirements for the B.A. degree in History/Administrative Studies are as follows:

1. Requirements for History (48 units)
   All requirements for the B.A. in History

2. Administrative Studies Requirements (37 units)
   a) Four lower-division courses (17 units)
      (1) BSAD 010 and BSAD 020A
      (2) STAT 048 or equivalent (may be used to satisfy breadth requirements)
      (3) CS 008 (may be used to satisfy breadth requirements)
   b) Two upper-division courses (8 units) from the list below:
      (1) ECON 102A or ECON 130 or ECON 162/BSAD 162
      (2) PSYC 140 or PSYC 142/BSAD 142
      (3) SOC 150/BSAD 150 or SOC 151/BSAD 151 or SOC 171
      (4) POSC 180 or POSC 182/BSAD 182 or POSC 183
      (5) ANTH 127 or ANTH 131
   c) A three-course track (12 units) in Business Administration courses, from one of the following:
      (1) Organizations (General):
          BSAD 105/ANTH 105,
          BSAD 150/SOC 150,
          BSAD 151/SOC 151,
          BSAD 176/SOC 176
      (2) Human Resources Management/Labor Relations:
          BSAD 142/PSYC 142,
          BSAD 152/ECON 152,
          BSAD 153/ECON 153, BSAD 155,
          BSAD 157
      (3) Business and Society:
          BSAD 116/PHIL 116, BSAD 161,
          BSAD 182/POSC 182,
          BSAD 186/POSC 186
      (4) Marketing:
          BSAD 110, and two from BSAD 112, BSAD 113,
          BSAD 114, BSAD 117
      (5) Managerial Accounting/Taxation:
          BSAD 163, and two from BSAD 166, BSAD 168A, BSAD 168B
      (6) Financial Accounting:
          BSAD 163, BSAD 165A, BSAD 165B
      (7) Finance:
          BSAD 134/ECON 134 and two from BSAD 135A, BSAD 136,
          BSAD 137, BSAD 138, BSAD 139
      (8) Management Information Systems:
          BSAD 170, BSAD 171, BSAD 173
      (9) Production Management:
          BSAD 121/STAT 121, and two from BSAD 122, BSAD 126,
          BSAD 127/STAT 127
   Note: In filling the dual requirements of the selected major, students may not count more than two courses toward both parts of their total requirements (History requirements and Administrative Studies requirements).

**History/Law and Society Major**

The major requirements for the B.A. degree in History/Law and Society are as follows:

1. Requirements for History (48 units)
   All requirements for the B.A. in History

2. Requirements for Law and Society (36 units)
   a) PHIL 007 or PHIL 007H
   b) LWSO 100
   c) One course chosen from the following list:
      ECON 111, PSYC 012, SOC 110A, POSC 114 (or equivalent course in research methods)
   d) Five courses chosen from the following list:
      ANTH 127, ECON 119, HISE 153, PHIL 183, POSC 167, SOC 159 (One of these courses may be replaced by a substitute choice from a list of courses published annually by the Law and Society Faculty Committee. Not more than two of the courses taken to meet this requirement [2.d] may be from the same department.)
   e) LWSO 193, Senior Seminar

Note: in filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements (History requirements and Law and Society requirements). The History courses that may fill the dual requirements include HISE 153 (History of the Common Law), and HISA 120A-HISA 120B (The Supreme Court and the Constitution).

**Minor**

The History Department also offers a minor in History. In order to receive a minor, students must take 28 units (7 courses), including

1. At least one World History course and at least one other lower-division course.

2. At least three courses in one of the following areas of concentration, including a seminar (HIST 191 E-Z):
   Ancient and Medieval
   Europe
   United States
   Latin America
   Asia and Africa
   History of Science and Technology
   Please note that the seminar HIST 191 E-Z is required and must be taken in the student's area of concentration.

3. At least two courses from two of the above fields, one in each.

Students who choose United States as their area of concentration are strongly advised to take HIST 017A-HIST 017B as preparation for upper-division courses in American history.

Lower-division courses taken elsewhere may be counted toward the lower-division requirement, and advance placement units earned in high school may count toward its fulfillment as well. Please consult with the Student Affairs Officer for further details.

Each History minor is urged to consult with the Student Affairs Officer for quarterly advising and to meet with the Undergraduate Advisor at least one time each year. Appointments can be made through the Student Affairs Officer.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.
Recommended Prelaw Courses
The History major has long been considered as an ideal major for students planning to study law since it meets the three goals that law schools recommend for undergraduate applicants:

1. That they achieve an understanding of the development of social, political, and economic institutions
2. That they develop an ability to communicate well, both orally and in writing
3. That they possess the capacity to think clearly and analytically.

The History Department especially recommends that majors take the following courses to prepare them for law school:

- HISE 150, Ancient/Medieval England
- HISE 153, History of the Common Law
- HISA 120A-HISA 120B, The Supreme Court and the Constitution

Education Abroad Program
The History Department encourages eligible students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units toward graduation. Because strategy in choosing courses to be taken here and courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult the departmental Student Affairs Officer for assistance. For further details see the Education Abroad Program under International Services Center in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

Laboratory for Historical Research (LHR)
The Laboratory for Historical Research supports quantitative historical research by faculty and students within the department. The facilities of the LHR, which include large microcomputers and terminals networked to the campus’ interactive computers, offer students a unique opportunity for quantitative historical research. The LHR’s director assists in the preparation and design of research projects which are part of many graduate and undergraduate courses. In combination with the department’s offerings in quantitative methods (HIST 235 and HIST 236), the LHR provides a center for extensive training in both the theoretical and practical dimensions of social scientific historical research.

GRADUATE PROGRAM

Graduate Advisor
Department of History
University of California, Riverside
Riverside, CA 92521-0204
histk@ucrmail.ucr.edu

Admissions
Applications for admission, due January 5, are normally for the fall quarter only, and the Graduate Division will automatically process all applications for the fall quarter. Under special circumstances, exceptions may be made for admission in other quarters, after consultation with the graduate advisor. Application deadlines are considered on May 1 on a space-available basis. Only fully completed applications will receive attention. Scores for the aptitude sections of the Graduate Record Examination (GRE) are required of all applicants. If the GRE is taken later than December, admissions decisions may be delayed. Applicants must submit a writing sample. Students taking the regular M.A. examinations or the Program in Historic Resources Management oral examinations may at that time request to be considered for admission to the doctoral program. They will be rated as recommended, acceptable, or not recommended.

Students entering the Master’s degree program choose a faculty advisor from the department faculty within two quarters of commencing their studies. Students entering directly into the Ph.D. program choose a faculty advisor immediately upon entering the program. Students may change faculty advisors as they continue their studies, with the approval of the Graduate Advisor. The Graduate Advisor works closely with each student’s faculty advisor in approving the student’s course of study.

Master’s Degree
The Department of History offers two programs of study leading to the master’s degree: The Regular Program and the Program in Historic Resources Management. The requirements for admission and courses of study are different for the two programs.

Regular Program (M.A.)
The primary purpose of the M.A. degree at UCR is to prepare the student for research as a professional historian and to further study towards the Ph.D. Students taking the M.A. degree receive training for careers in teaching or other areas such as government service or journalism.

A candidate for the master’s degree in the Regular Program must complete a minimum of 40 units of required course work beyond the baccalaureate. This must include

1. At least 12 units of graduate courses related to the candidate’s area of specialization (see list below)
2. Four (4) units of either HIST 235 (Materials in Social Science History) or HIST 236 (Quantitative Methods for Historians) or HIST 238A (Oral History) or HIST 250 (New Directions in Historical Research) or HIST 254 (Theory and Method of History)
3. At least 16 units in courses in two general areas of M.A. specialization listed below that are not in the candidate’s area of specialization. One area also may be chosen from any Ph.D. field listed below that is outside the candidate’s area of specialization. Eight (8) of the units must be at the graduate level. HIST 290 may not be used to fulfill this requirement.
4. At least one two-semester graduate research seminar in the candidate’s area of specialization.

Candidates should normally complete all course requirements for the master’s degree within six quarters.

The candidate is required to demonstrate an ability to read one foreign language. Satisfying the foreign language requirement is a prerequisite for taking the comprehensive oral examination. The requirement can be fulfilled by showing basic proficiency in a departmental examination or by passing a designated language course.

Students who fail the examination in their chosen language four times and fail to pass the designated courses may not advance any further.

M.A. students are expected to take the department qualifying examinations in their field of specialization no later than spring quarter of their second year. The departmental qualifying examinations are based on course work and reading lists associated with each of the six areas of specialty. Departmental qualifying examinations are offered in all fields in the fall and spring quarters only.

Students receiving a grade of high pass on the departmental qualifying examinations are allowed to enter directly into the Ph.D. program without having to complete the master’s degree. Students who move directly into the Ph.D. program may obtain an M.A. degree by completing the requirements for the M.A.

Students receiving a grade of pass on the departmental qualifying examinations are allowed to proceed with work towards a master’s degree. Upon completion of their M.A. comprehensive oral examination, students may be admitted into the Ph.D. program upon the recommendation of their oral examination committee and approval by the Graduate Study Committee.
Students who fail the department qualifying examination are allowed to retake the examination; however, they must do so the next time the examinations are offered. Two failures on the department qualifying examination preclude a student from continuing in the graduate program.

Candidates must pass a comprehensive oral examination in their area of specialization to receive the M.A. degree. The candidate must present a substantive research paper for consideration by the examining committee. The research paper is normally developed from work in a research seminar in the candidate’s major field of interest. The examining committee will be chaired by the student’s faculty advisor and include at least one other faculty member chosen by the candidate and approved by the Graduate Study Committee. The oral examination committee makes a recommendation to the Graduate Study Committee as to whether the candidate should be allowed to enter the Ph.D. program. The Graduate Study Committee makes the final determination whether the student is allowed to proceed to the Ph.D. program.

The comprehensive oral examination is normally completed within three quarters following the department qualifying examinations. Students who fail the comprehensive oral examination are allowed to retake the examination by the examining committee as to do so within two quarters following the term of their first attempt at the comprehensive oral examination.

The department offers six general areas of specialization: United States; Europe, 1400-1815; Europe, 1789-present; Latin America; England; and Russia. Within the United States area of specialization there are several subspecialties in which the student is expected to develop a research paper.

1. United States
   Students specializing in the United States must complete HIST 201A, HIST 201B, and HIST 201C. They are also encouraged to take HIST 230. Candidates in United States history may select their advanced work from the following fields and related seminars:
   Early America, 1607-1800: HIST 272A - HIST 272B
   Nineteenth-Century United States, 1800-1896: HIST 274A-HIST 274B
   Twentieth-Century United States, 1896-present: HIST 275A-HIST 275B

2. Europe, 1400-1815
   Students specializing in Europe, 1400-1815, must take 8 units from HIST 202C and HIST 202D, plus a minimum of 4 additional units of either HIST 202E or HIST 202F or HIST 202G or HIST 205A or HIST 205B or HIST 209A or HIST 209B. They must also take HIST 253A-HIST 253B, the seminar in early modern European history.

3. Europe, 1789-present
   Students specializing in Europe, 1789-present, must take 8 units from HIST 202E or HIST 202F or HIST 202G, plus a minimum of 4 units of from HIST 202C or HIST 202D or HIST 205A or HIST 205B or HIST 209A or HIST 209B. They must also take HIST 253A-HIST 253B, the seminar in modern European history.

4. Latin America
   Students specializing in Latin America must take at least 12 units of graduate courses related to their specialty, including HIST 206A and HIST 206B. They must also take HIST 285A-HIST 285B, the seminar in Latin American history.

5. England
   Students specializing in England must take 12 units of graduate courses related to their specialty, including HIST 205A and HIST 205B. They must also take HIST 256A-HIST 256B, the seminar in English history.

6. Russia, 1801-present
   Students specializing in Russia must take 12 units of graduate courses related to their specialty, including HIST 209A and HIST 209B. They must also take HIST 255A-HIST 255B, the seminar in Russian history.

**Program in Historic Resources Management (M.A.)**

This program provides education in history as well as technical training for historical careers in archives, historic preservation, museums, and other positions in the public sector.

Applicants for admission to the program normally must have the Bachelor of Arts in History. The program accepts applicants having the B.A. in Anthropology, Art History, Political Science, or Sociology, provided that these applicants can demonstrate a satisfactory knowledge of history.

The Program in Historic Resources Management student prepares in three areas:

1. An historical field, in which the student is trained in academic research and historiography
2. A professional specialty — archival management, historic preservation, or museum curatorship
3. A subspecialty, consisting of courses taken outside the department related to the professional specialty

A candidate for the master’s degree in this program must complete a minimum of 36 units of graduate and upper-division undergraduate units as follows:

1. One graduate history two-quarter research seminar
2. Two courses from any History courses numbered 200-250
3. One course from HIST 260, HIST 262, HIST 263, chosen according to the student’s subspecialty (The accompanying practicum must also be taken if offered.)
4. Two upper-division undergraduate or graduate courses outside the Department in subjects related to the subspecialty (from a list prepared by the program committee or with the Graduate Advisor’s approval)
5. Two additional upper-division undergraduate or graduate courses either in History or in another department in subjects relating to the subspecialty, chosen in consultation with the Graduate Advisor

All students must take HIST 398-I and HIST 402, which do not count in fulfilling the 36-unit requirement, followed by HIST 290. The candidate is required to take a ten-week internship, coincident with an academic quarter or summer session, at a cooperating institution, for training, under professional supervision, in a field of the candidate’s choice. Internships are regularly offered at the Riverside Municipal Museum; the Riverside County Department of Parks — Office of the Historical Specialist; the San Bernardino County Museum; Colonial Williamsburg; and the Smithsonian Institute. The internship is registered with a History Department faculty advisor as HIST 398-I.

The internship requires writing a field report. When the candidate’s advisor and the Historic Resources Management Committee judge that an additional skill, particularly in the subspecialty, is needed, then a defined level of competency in that skill is required for the degree.

The candidate must pass an oral examination comprised of two parts, one part on the field, report-in-progress and a second part on the relevant elements of the candidate’s field of history and the content of the subspecialty.

The committee on Historic Resources Management oversees the Program in Historic Resources Management for the M.A. and coordinates Program activities and departmental relations with historical societies, preservationist groups, local government organizations, museums, and archives.

Students in the Historic Resources Management Program who wish to continue on for the doctorate at UCR are eligible for the Ph.D. program on a case by case basis.
Doctoral Degree

The M.A. degree in History is not a prerequisite for admission to the doctoral program. Students not holding an M.A. degree in History and passing the department qualifying examination with a grade of high pass in one area of specialization are admitted to the Ph.D. program. Students with an advanced degree in a field closely related to History and involving significant study of history, such as American Studies, Latin American Studies, or Russian Studies, are reviewed by the Graduate Study Committee on a case-by-case basis to determine if the student should be exempted from taking the department qualifying examination and be admitted directly into the Ph.D. program. Students with only a B.A. degree enter the M.A. program, even if their ultimate degree objective is the Ph.D.

Students in the Ph.D. program must prepare in three fields: a research field, a complementary field, and a teaching field. The research field must be chosen from the list of research fields below. The complementary and teaching fields shall be chosen from either the research fields or the additional fields below. Students will be examined in the research and complementary fields by written and oral examinations. Students will prepare for the teaching field by completing at least 12 hours of relevant courses, with at least 8 hours at the graduate level, including at least one relevant Materials course from the sequence HIST 201-209. HIST 290 may not be used towards this requirement. Students must also complete HIST 301.

In special cases, the student may petition to replace the complementary field with a custom field designed by the student in consultation with two faculty members who agree to administer the written examinations in that field. Students may not take three fields that deal exclusively with the same country or region. Students normally take their Ph.D. qualifying examinations and complete their teaching field course work no later than the seventh quarter following admission into the Ph.D. program.

Students must complete the materials courses in their research and complementary fields, before attempting the examinations. Written examinations are offered in fall, winter, and spring quarters. A student may take written examinations separately in their research and complementary fields and may schedule the oral examination immediately after successfully completing their written examinations and their teaching field courses.

The committee for the oral examination, chaired by the student's faculty advisor, shall consist of five faculty members, or six where appropriate, nominated by the department and appointed by the Graduate Dean.

Research Fields:
- Early America, 1607-1800
- Nineteenth-Century United States, 1800-1896
- Twentieth-Century United States, 1896-present
- Native American History
- Early Modern Europe
- Europe, 1789-present
- England, 1485-present
- Russia, 1801-present
- Latin America, 1492-1810
- Latin America, 1810-present

Additional Fields:
- England, 1485-1820
- England, 1760-present
- Social Science History
- Women in Culture and Society
- Comparative World History
- Early Modern World History

Every student in the doctoral program must demonstrate a proficiency in at least one foreign language equivalent to that required for the M.A. degree. Requirements successfully passed in a particular language while in the M.A. program may be counted towards meeting some requirements in the doctoral program. Specific additional language requirements for the doctoral program will depend on the students' research fields; students may need to show research proficiency in a language for the Ph.D., even if they showed basic proficiency in that language for the M.A. Consult the Department of History for the language requirements in each research field.

Candidates must pass all foreign language requirements before taking their Ph.D. research field written examinations, but the candidates may take the Ph.D. complementary field written examinations before completing their foreign language requirements. They may take the departmental examination in any one language not more than four times. Continued failure to make progress in required foreign language(s) may be cause for termination from the program. Some seminars involve the use of a foreign language.

Doctoral students should normally take at least two, two-quarter research seminars on the UCR campus, at least one of which must be taken after the M.A. has been granted or the student has successfully passed the department qualifying examination. If they have taken an M.A. seminar in this department or if they have written an M.A. thesis in a field of specialization, that is normally accepted for one of the two required seminars. Doctoral students must complete 8 hours of courses on historical theory and methods. Four of these hours must be chosen from HIST 235 (Materials in Social Science History); HIST 236 (Quantitative Methods for Historians); HIST 238A (Oral History); HIST 250 (New Directions in Historical Research); or HIST 254 (Theory and Method of History). The additional four hours may also be chosen from these courses, or may consist of a course outside the department that is approved by the Graduate Advisor.

The student must submit to the Graduate Study Committee a dissertation proposal approved by the student's faculty advisor, who is the chair of the dissertation committee, by the end of the next academic quarter after the student has been advanced to candidacy. See departmental guidelines for proposal requirements.

The candidate must submit an acceptable dissertation and pass a final oral examination. The dissertation, which must demonstrate scholarly original, and independent investigation, is on a subject the student has chosen from the research field with the advice and approval of the dissertation committee. The final oral examination deals primarily with the relation of the dissertation to the general field in which it lies.

The normative time to the Ph.D. degree, including M.A. work, is 17 quarters.

HISTORY

LOWER-DIVISION COURSES

The History Department offers these lower-division courses for the benefit of the entire campus and not specifically for History majors. HIST 010, HIST 015, HIST 017A-HIST 017B, and HIST 020 are appropriate preparation for upper-division work in the department.

HIST 003. The Historian as Detective. (4)
Lecture, three hours; consultation, one hour. HIST 001 is designed to acquaint students with several approaches to the methods and processes historians use to reach conclusions about the past. Students will have the opportunity to work creatively with historical materials and become the historian as detective. These methods will be introduced with varying topics to be listed in the Schedule of Classes. May be repeated for credit.

HIST 004. Introduction to Chicano History. (4)
Lecture, three hours; extra reading, three hours. The historical heritage of the Chicano from Spanish and Indian origins to the Chicano movement, with emphasis on the period since 1845. Cross-listed with ETST 004.

HIST 010. World History: Prehistory to 1500. (4)
Lecture, three hours; discussion, one hour. Prerequisites: none. A comparative introduction to the development of cultures in Europe, the Americas, Africa, and Asia. Topics covered are the origins of world civilizations; the classical world, or bronze age, from a global perspective; and the evolution of complex political systems throughout the medieval world. Includes a comparative
discussion of world religions. West and East. Credit is awarded for only one of HIST 010 or HIST 010H.

HIST 010H. Honors World History: Prehistory to 1500. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to HIST 010. A comparative introduction to the development of cultures in Europe, the Americas, Africa, and Asia. Topics covered are the origins of world civilizations, the classical world, or bronze age, from a global perspective; and the evolution of complex political systems throughout the medieval world. Includes a comparative discussion of world religions. West and East. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of HIST 010 or HIST 010H.

HIST 015. World History: 1500 to 1900. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. Emphasis on the unique characteristics of world cultures as they entered into a critical period of increasing interaction, a process that led to the shaping of the modern world order. Specific themes include religious, economic, and political revolution; the development of modern science; continuity and change in agrarian societies; industrialism; imperialism; and changes in the patterns of everyday life. Credit is awarded for only one of HIST 015 or HIST 015H.

HIST 015H. Honors World History: 1500 to 1900. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to HIST 015. Emphasis on the unique characteristics of world cultures as they entered into a critical period of increasing interaction, a process that led to the shaping of the modern world order. Specific themes include religious, economic, and political revolution; the development of modern science; continuity and change in agrarian societies; industrialism; imperialism; and changes in the patterns of everyday life. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of HIST 015 or HIST 015H.

HIST 017A-HIST 017B. Introduction to United States History. (4-4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to the major themes and issues in the history of the United States from colonialization to the present. 017A: from the colonial period to the middle of the nineteenth century. 017B: from the middle of the nineteenth century to the present.

HIST 020. World History: Twentieth Century. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to world cultures, political systems, war, and revolution in the twentieth century. Topics include the rise and fall of the superpowers, colonization and decolonization, boom and bust, fascism and communism, world wars, and contemporary history. Credit is awarded for only one of HIST 020 or HIST 020H.

HIST 020H. Honors World History: Twentieth Century. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to HIST 020. An introduction to world cultures, political systems, war, and revolution in the twentieth century. Topics include the rise and fall of the superpowers, colonization and decolonization, boom and bust, fascism and communism, world wars, and contemporary history. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of HIST 020 or HIST 020H.

HIST 025. The Ancient Mediterranean. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): none. Surveys the political history of the ancient Mediterranean world from the Bronze Age (3000 B.C.) to the beginning of the Common era. Focuses on the Near East (Sumer, Babylonia, Assyria, Egypt, Israel, Persia), Greece, and Rome. Provides a coherent background for advanced study in ancient Near Eastern, biblical, or classical history.

HIST 026. Civilization before Greece and Rome. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): none. An introduction to the history of the ancient Near East, focusing on Mesopotamia and Egypt, but also including the Syro-Palestinian, Anatolian, and Aegean regions. Covers the history and culture of the world from circa 3000 to 300 B.C. that formed the backdrop to the Hebrew Bible and the Homeric epic tradition. Provides a background for further study of the ancient Mediterranean, Near Eastern, or biblical worlds.

HIST 030. Themes and Personalities in History. (4)
Lecture, three hours; consultation, one hour. Enduring themes and great personalities in the history of man selected from Western and non-Western traditions. Concentration will be on particular subtopics to be announced in the Schedule of Classes.

HIST 033. Witchcraft in Colonial America. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): none. Introduces the history of witchcraft beliefs and witch-hunting in colonial America. Explores witchcraft in its many dimensions: religious, cultural, psychological, political, legal, social, and economic. Students read original documents and study recent scholarly interpretations of early American events and attitudes.

HIST 035. History of North American Indians, 1491 to 1840. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): none. An examination of North American Indian history from 1491 through the Removal Era, highlighting the experiences of selected representative Native groups. Special attention given to the importance of viewing historical events from the perspective of Native Americans.

HIST 036. History of North American Indians, 1840-present. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): none. Examines North American Indian history from the Removal Era to the present, focusing on the experiences of representative Native groups. The effects of government policies on Indian peoples are assessed and issues of current concern to Indian communities are highlighted. Special effort is made to view historical events from an Indian perspective.

HIST 038. The Maya from Ancient to Modern Times. (4)
Lecture, three hours; individual study, three hours. Examination of the Maya of Mexico, Guatemala, and Honduras from the rise of civilization to the present day. Topics to be discussed include the nature of Maya civilization; the Preclassic, Classic, and Postclassic Maya; the Spanish conquest, the Maya under Spanish colonialism; the impact of liberal policies in the nineteenth century; revolution and repression in the twentieth century. Videos and slides used to illustrate important themes and concepts.

HIST 040. Gods, Ghosts, and Grandparents. (4)
Lecture, three hours; discussion, one hour. Considers some of the different ways the Chinese regarded— and still regard— gods, ghosts, and ancestors. Nearly all the readings are primary sources spanning almost four thousand years of Chinese history and include texts on oracle bones, philosophical arguments for and against the existence of spirits, tomb contracts for the dead, a sutra promoting the goddess Guanyin as Giver of Sons, ghost stories, and eyewitness accounts of funeral rituals. Cross-listed with RELI 044.

HIST 045 (E-Z). Topics in Asian History. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): none. An introduction to regional histories and cultures of Asia. E. Premodern China and Japan; F. Contemporary China; G. India in the Western Imagination. Cross-listed with AST 045 (E-Z).

HIST 051. Europe from Plague to Revolution, 1400-1750. (4)
Lecture, three hours; discussion, one hour. A survey of European history from the aftermath of the Black Death until the French Revolution. Introduces the geographic, demographic, and economic conditions underlying early modern European society, and examines cultural, political, and intellectual forms as they changed. Special attention is given to the historical experience of individuals, including commoners and elites.

HIST 052. Europe from the Enlightenment to 1968. (4)
Lecture, three hours; discussion, one hour. A survey of European history from the mid-eighteenth century to 1968. Focuses on the political and social revolutions in France and Russia, two world wars, and the consequences of rapid industrialization. Examines the emergence of a large middle class, the transformation of women’s roles, and changing perceptions of the outside world.

Lecture, three hours; consultation, one hour. A close examination of the cultural and political trends in the period from 1960-1975, with emphasis on the rise of the New Left, the counterculture and the growing militancy of Blacks, Native Americans, Chicanos, and women.

HIST 061. Martin Luther King Jr. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ETSI 001, HIST 060, or consent of instructor. A study of the life of Martin Luther King, Jr. with emphasis on the civil rights campaigns he led in the period, 1955-1968, and on the social and political philosophies he taught and espoused. Cross-listed with ETSI 061.

HIST 075. Introduction to Latin America. (4)
Lecture, three hours; consultation, one hour. The historical heritage of Latin America from its Indian, Spanish, and African origins to the present, including the related Latino experience in the United States. Contemporary and historical themes will range from poverty, revolution, race relations, and imperialism to music, art, sports, popular culture, and social mores.

UPPER-DIVISION COURSES

HIST 092. Oral History. (4)
Seminar; three hours, field; three hours. Prerequisite(s): upper-division standing or consent of instructor. Theory and practice of oral history as a research technique, including research preparation, interview procedures,
HIST 103. History of Science from Antiquity to Copernicus. (4)
Lecture, three hours; outside research, two hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to ancient and medieval science focusing on the development of mathematical description of nature in astronomy. Secondly, the early histories of physics and mechanics as they relate to the history of astronomy are covered.

HIST 104. The Scientific Revolution. (4)
Lecture, three hours; on-line discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. History of the scientific revolution of the sixteenth and seventeenth centuries from Copernicus through Newton, stressing the cultural interaction of science, philosophy, and religion, with secondary attention to the historical sociology of science.

HIST 105. Science in the Modern World. (4)
Lecture, three hours; on-line discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. History of science in the nineteenth and early twentieth centuries, stressing the rise of the Darwinian world view, the genetic revolution and its social consequences, and the romantic rejection of science.

HIST 106. Science in Triumph and Crisis. (4)
Lecture, three hours; on-line discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. History of science in the twentieth century with attention to the revolutions in physics and biology, the role of scientists in the world wars, the social responsibility debate, and the rise of the United States as a scientific power.

HIST 107. Myth and Science in Antiquity. (4)
Lecture, three hours; outside research, two hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. Topics in ancient Near Eastern and Classical Mediterranean thought concerning the nature of the cosmos, focusing on traditions of early myth, science, and natural philosophy. Questions regarding the nature of myth and science and the historical relation between them are evaluated.

HIST 108. Technology in Premodern Civilizations. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines relations between society, machine, and state in ancient China, Greece, and Rome, and in medieval Europe. Focuses on key mechanical and civil technologies and the role of the state in differentiating their development between the four historic civilizations. A major theme concerns the relation of craft and state technologies to abstract natural reasoning as a historical background to scientific revolution in Europe.

HIST 109. Technology in Modern Europe and America, 1700-Present. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the emergence of modernity in Europe, the first and second industrial revolutions in Europe and America, the development of diverse commodities as the typical form of consumer technology in the nineteenth and twentieth centuries, philosophical issues in understanding technology, and whether or not the technological social structures in the United States are an exception to those developed in Europe.

HIST 110. History of Ancient Astronomy. (4)
Lecture, three hours; individual study three hours. Prerequisite(s): upper-division standing or consent of instructor. Explores the origins and history of ancient astronomy from Mesopotamia to the Greco-Roman world. Topics include the problems of the calendar and planetary motion, and the relation between astronomy and astrology in the ancient world. Focuses on readings from primary texts.

HIST 111. Public History and Community Voices. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the study of public history and the use of oral history, narratives, written sources, photographs, material culture, and other documentary evidence important to presenting historical information and interpretation to a large audience. Analysis of archives, museums, government agencies, familial sources, and other historical repositories that hold community voices. Students present public history by producing an exhibit, published work, or community project.

HIST 114 (E-Z). Topics in Film and History. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. The study of the film as historical document, including the role of the filmmaker as an interpreter of history, and the value and problems of using film for historical analysis. Focus is on film and history.

HIST 136. South Africa in Twentieth Century. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to students to the social history of the late nineteenth- and twentieth-century South Africa. Themes include imperialism/colonialism, nationalism, industrialization, racism/apartheid, literature, and culture.

HIST 137 (E-Z). Themes and Topics in African History. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. A thematic and topical approach to the study of African history from the early Nile Valley civilizations to the twentieth century. Examines the temporal and spatial development of African societies— including their social, political, economic, and ideological systems— during the precolonial, colonial, and postcolonial periods. F. West African History to 1800; I. Nineteenth- and Twentieth-Century South Africa; Themes include imperialism/colonialism, nationalism, industrialization, racism/apartheid, literature, and culture.

HIST 180. Early Traditional China. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor; at least one lower-division history course recommended. A survey of Chinese history from the tenth century to the early nineteenth century, covering the Song, Yuan, Ming, and part of the Qing dynasties. Emphasis on social, economic, and political history.

HIST 181. Late Traditional China. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of Chinese history from the late eighteenth century to 1911. The focus is on reaction to the Western impact and modernization.

HIST 182. Modern China. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor; HIST 180 and HIST 181 are recommended. Examine the history of China from the Opium War to the early Communist period (1842-1960). The emphasis is on reaction to the Western impact and modernization.

HIST 189. Modern Jewish History. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of Jewish history in Europe and America since the emancipation of the Jews during the French Revolution. Topics include assimilation, the rise of anti-Semitism, the Jews and socialism and cultural modernism, Jewish life in Europe and America, emigration, the Holocaust, Zionism, and the establishment of Israel.

HIST 190. Special Studies. (1-5)
To be taken with the consent of the chair of the department to meet special curricular problems. Course is repeatable to a maximum of 16 units.

HIST 191 (E-Z). Seminar in History. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Topics in modern European, Latin American, and African history from the period or subject matter of the topic, or consent of instructor. A substantial research paper or project, the result of carefully guided independent work, is required (students may continue and expand papers or projects into a quarter of directed research by enrolling in HIST 191). 

HIST 194. Individual Internship in History. (1-12)
Laboratory, four to thirty-six hours. Prerequisite(s): consent of instructor and upper-division standing. Individual interns will learn about the policies and operations, present and past, of cooperating agencies, such as museums, archives, professional associations, clinics, hospitals, churches, businesses. Students will become familiar with the on-going operations of these organizations and will research and write their histories under faculty supervision. Course is repeatable to a maximum of 16 units.

HIST 199. Senior Research. (1-4)
Individual research, three to twelve hours. Prerequisite(s): consent of instructor and upper-division standing. Individual interns will learn about the policies and operations, present and past, of cooperating agencies, such as museums, archives, professional associations, clinics, hospitals, churches, businesses. Students will become familiar with the on-going operations of these organizations and will research and write their histories under faculty supervision. Course is repeatable to a maximum of 8 units.

HIST 199H. Senior Honors Research. (1-5)
Outside research, three to fifteen hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Offers the opportunity for directed research at an honors level. Satisfactory (S) or No Credit (NC) grading is not available.
**GRADUATE COURSES**

Consent of the instructor is required to enroll in all graduate courses.

**READING COURSES**

HIST 201A-HIST 201C. Materials for American History. (4-4-4)
Lecture and discussion, three hours. The major periods of American history as seen through their primary and secondary literature. 201A: Colonial North America; 201B: United States, 1789-1877; 201C: United States, 1877-present.

HIST 202 (C-G). Materials for European History. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. 202E: Early Modern Europe (1400-1648); 202F: Ancien Régime (1648-1789); 202E: Nineteenth Century (1789-1850); 202F: Early Twentieth Century (1890-1945); 202G: Twentieth Century (1945-1989).

HIST 203. Materials for Native American History. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. Introduces students to the central historical problems and historiographical debates in Native American history, as well as to the primary materials that scholars use in this field.

HIST 204. Materials for Modern French and Latin European History. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. Basic readings in secondary literature on the history of modern France since the Revolution of 1789 with selected themes on Italy and Spain.

HIST 205A-HIST 205B. Materials for English History. (4-4)
Lecture, three hours; outside research, three hours. Prerequisite(s): consent of instructor. An examination of some of the major primary materials for English history along with an assessment of important secondary accounts. 205A: England, 1485-1820; 205B: England, 1760-present.

HIST 206A-HIST 206B. Materials for Latin American History. (4-4)
Lecture, three hours. The major periods of Latin American history as seen through their primary and secondary literature. 206A: Colonial Latin America to 1820; 206B: Latin America, 1820-present.

HIST 207. Materials for the Early Modern World. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. An exploration of the major concepts, categories, methodological approaches, and historiographical issues in recent scholarship on the early modern world (circa 1400-1750), focusing on interregional and interdisciplinary analysis.

HIST 208. Materials for Modern German History. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. Readings of important monographs in German history from 1815 to the present.

HIST 209A-HIST 209B. Materials for Modern Russia. (4-4)
Lecture, three hours; consultation, one hour. Prerequisite(s): graduate standing or consent of instructor. An examination of the historiography on Russian history. Topics include social developments, cultural and religious history, peasants, industrialization, revolutionary movements, Bolshevism, ideology, the Russian Civil War, Stalinism, World War II, and the post-Stalin period. 209A: Russia, 1801 to 1917; 209B: Soviet History.

HIST 210. Introduction to Economic History. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): graduate standing. Analysis of selected problems on economic history with an emphasis on methodological approaches to those issues.

HIST 212 (E-Z). Topics in the History of Science. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. Examines major historical themes and works in the history of science from the ancients to the present, emphasizing the historical sociology of science, the social construction of scientific paradigms, and relations between science and other intellectual traditions that seek to explain nature. E Comparative Thematics.

HIST 215 (E-Z). Topics in American History. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing. Analysis of selected specific topics in American history. E. Slave Folklore and the Historical Process, F. Culture and Politics in Twentieth-Century United States, G. Transnational Migrations.

HIST 216. Topics in Latin American Social and Economic History. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): graduate standing or consent of instructor. An introduction to a set of major research monographs in Latin American social and economic history, with an emphasis on methodological issues and of questions of document authorship, provenance, paleography, language and syntax, internal structures, and variant texts. E. Russian. Each segment is repeatable to a maximum of 8 units.

HIST 220A-HIST 220B. Oral History Methods and Archive. (4-4)
Lecture, three hours; consultation and extra reading, three hours. Prerequisite(s): HIS 137. The broad themes and historical interpretations regarding the frontier as a factor in the American character and in American institutions.

HIST 223. Materials in Social Science History. (4)
Lecture, three hours; research, three hours. Prerequisite(s): graduate standing or consent of instructor. An overview of quantitative historical research with an emphasis on theory. Analyses of general problem involved in quantitative research and the variety of approaches employed by historians working in this area. Special attention will be given to demographic analysis, family and community history, and the study of elites and political behavior.

HIST 236. Quantitative Methods for Historians. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): graduate standing or consent of instructor. An introduction to quantitative methods in historical research. Emphasis is on practical applications. Topics include quantitative research design, coding, and data management; the problems of quantitative historical data; and common statistical methods and analytical techniques.

HIST 238A-HIST 238B. Oral History Methods and Archival. (4-4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. An introduction to quantitative methods in historical research and the variety of approaches employed by historians working in this area. Special attention will be given to demographic analysis, family and community history, and the study of elites and political behavior.
HIST 250. New Directions in Historical Research. (4)
Seminar, three hours; extra reading, three hours. Prerequisite(s): consent of instructor. Frontiers of research in major historical periods. The coordinator and guest professors discuss the methods and kinds of research which are most fruitful in their particular specialty.

HIST 252. Materials Supplement. (4)
Seminar, three hours. Prerequisite(s): any course in 201-206 series. Designed as a supplement to program of readings covered in materials courses; additional works are to be drawn from reading lists for M.A. comprehensive examinations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

HIST 253A-HIST 253B. Seminar in Renaissance and Reformation History. (4-4)
Seminar, three hours; outside research, three hours. Prerequisite(s): consent of instructor; Seminar in Renaissance and Reformation history. Graded "In Progress" (IP) until both terms are completed, when a final letter grade is assigned. Each course is repeatable to a maximum of 8 units.

HIST 254. Theory and Methods in History. (4)
Seminar, three hours; extra reading, three hours. Prerequisite(s): graduate standing; consent of instructor; consent of advisor if repeating the course. Studies the evolution of the discipline of history by exploring theories, philosophies, and methods that are used in historical explanation. Concentrates on how some particular body of theory has influenced the writing of history. Course is repeatable to a maximum of 12 units as topics change.

HIST 255A-HIST 255B. Seminar in Modern Russia. (4-4)
Seminar, three hours; outside research, three hours. Prerequisite(s): UC Riverside graduate standing and consent of one of the UC Riverside instructors. A research seminar on modern Russian history (1801 to present). Topics include, but are not limited to, social history, labor, ideology, politics, and revolutions from the Imperial and/or Soviet periods. An intercampus course taught jointly by faculty from UC Riverside, Irvine, San Diego, and Los Angeles. Graded "In Progress" (IP) until both terms are completed, when a final grade is assigned. Each course is repeatable to a maximum of 8 units.

HIST 256A-HIST 256B. Seminar in English History. (4-4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing and HISE 151, HISE 152, or equivalents. A seminar on seventeenth- and eighteenth-century English history with primary emphasis on the historical literature within the field. Graded "In Progress" (IP) until both terms are completed, when a final grade is assigned. Each course is repeatable to a maximum of 8 units.

HIST 258A-HIST 258B. Seminar in Modern European History. (4-4)
Seminar, three hours. Each course is repeatable to a maximum of 8 units.

HIST 260. Historic Preservation. (4)
Seminar, three hours; conference, one hour. Prerequisite(s): graduate standing or consent of instructor. Public policy and instruments of historic preservation in the urban setting.

HIST 260L. Preservation Conservation Practicum. (2)
Research, six hours. Prerequisite(s): HIST 260, and/or HIST 261. Supervised training in the National Register nomination process and in development of the conservation management plan, with independent research projects in either conservation or preservation.

HIST 261. Conservation Science and Historical Objects. (4)
Seminar, three hours; laboratory, two hours. Prerequisite(s): graduate standing or consent of instructor. Principles and methods of conservation science related to historical artifacts; introduction to conservation practice in selected categories of objects; seminar and laboratory.

HIST 262. Museum Research and Interpretation. (4)
Seminar, three hours; consultation, one hour. Prerequisite(s): graduate standing or consent of instructor. Theory and practice of archival management; history of archives; professional ethics.

HIST 263L. Archival Management Practicum. (3)
Research, three hours. Prerequisite(s): HIST 263. Supervised research and administrative experience in an archive; intended to accompany HIST 263.

HIST 272A-HIST 272B. Seminar in American Colonial and Early National History. (4-4)
Seminar, three hours. Each course is repeatable to a maximum of 8 units.

HIST 274A-HIST 274B. Seminar in Nineteenth Century United States History. (4-4)
Seminar, three hours. Each course is repeatable to a maximum of 8 units.

HIST 275A-HIST 275B. Seminar in Latin American History. (4-4)
Seminar, three hours; research, three hours. Each course is repeatable to a maximum of 8 units.

HIST 291. Individual Study in History. (1-12)
A program of study designed to advise and assist graduate candidates who are preparing for examinations. Does not count toward the unit requirement for the master's degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

HIST 292. Concurrent Analytical Studies. (1-4)
Research, three to twelve hours. Prerequisite(s): consent of instructor. Taken concurrently with some 100-series course, but on an individual basis. Devoted to completion of a graduate paper based on research or criticism related to the 100-series course, the program of study is worked out with the instructor. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

HIST 297. Directed Research. (1-6)
Prerequisite(s): consent of instructor. Individualized graduate student research under the sponsorship of specific faculty members, in topics other than the student's dissertation. Graded Satisfactory (S) or No Credit (NC). May be repeated for up to 8 units.

HIST 299. Research for Thesis or Dissertation. (1-12)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

HIST 301. The Teaching of History at the College Level. (4)
Seminar, three hours; consultation, one hour. Prerequisite(s): graduate standing. Normally required of all doctoral candidates and teaching assistants in the department; open to terminal M.A. students with consent of instructor. Credit not applicable to graduate unit requirements. Graded Satisfactory (S) or No Credit (NC).

HIST 302. Teaching Practicum. (1-4)
Clinic, one to four hours; seminar, one hour. Prerequisite(s): limited to departmental teaching assistants; graduate standing. Supervised teaching in upper- and lower-division history courses. Required of all History teaching assistants. Fulfills teaching portion of Ph.D. teaching requirement. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.
HIST 398-I. Internship in Historic Resources Management. (8-12) Research, twenty to forty hours for ten weeks. Prerequisite(s): consent of program coordinator; A ten-week internship at a museum, archive, gallery, or other cooperating institution under the direction of a faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

HIST 402. Professional Practice for the Public Historian. (2) Lecture and discussion, two hours. Prerequisite(s): graduate standing. Required of all students in the Program in Historic Resource Management and open to other graduate students. Case study approach to practice, professional codes, and ethics of public historians, including problems in conflict of interest, fee services, political advocacy, expert legal testimony, civil service, conflict with other professions (e.g., architecture), bidding procedures, and proprietary rights.

HISTORY OF THE AMERICAS

UPPER-DIVISION COURSES

HISA 110A. Colonial America. (4) Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Exploration of early American society from settlement through the mid-eighteenth century. Topics include the convergence of Native American, European, and African cultures; the origins of slavery; religious diversity; and the growth and development of the colonies.

HISA 110B. Revolutionary America. (4) Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis of the political, social, and cultural movements that led to the American Revolution and the formation of the Republic. Topics include crop activity, imperial conflict, and the creation of the constitution.

HISA 113. Slavery and the Old South. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An investigation of slavery in the antebellum South. Topics include: the emergence of the self-conscious South, the romanticized plantation, American historians and slavery, etc.

HISA 114. The American Civil War. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis of early American society from settlement through the mid-eighteenth century. Topics include the convergence of Native American, European, and African cultures; the origins of slavery; religious diversity; and the growth and development of the colonies.

HISA 117A. United States, 1914 to 1945. (4) Lecture, three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include the emergence of the United States as a global power, the second industrial revolution, the development of a consumer culture, and the creation of a regulatory state.

HISA 117B. United States, 1945 to the Present. (4) Lecture, three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor. Topics include the Cold War, the political and cultural consequences of the Second World War, the social movements of the 1960s, Vietnam, and the conservative resurgence of the 1970s and 1980s.

HISA 118. American Thought in the Twentieth Century. (4) Lecture, three hours; on-line discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. An exploration of the political, social, and cultural movements that led to the American Revolution and the formation of the Republic. Topics include crop activity, imperial conflict, and the creation of the constitution.

HISA 119. American Politics in the Twentieth Century. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. The American constitutional law and theory in its historical context. The role of the Supreme Court in shaping such constitutional doctrines as: regulation of the economy, civil liberties, civil rights, presidential power, equal representation. HISA 126A is not a prerequisite for HISA 126B.

HISA 120A-HISA 120B. The Supreme Court and the Constitution. (4-4) Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis of early American society from settlement through the mid-eighteenth century. Topics include the convergence of Native American, European, and African cultures; the origins of slavery; religious diversity; and the growth and development of the colonies.

HISA 122A-HISA 122B. History of Religion in America. (4-4) Lecture, three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis of early American society from settlement through the mid-eighteenth century. Topics include the emergence of the self-conscious South, the romanticized plantation, American historians and slavery, etc.

HISA 123. American Economic History. (4) Lecture, three hours; individual study; three hours. Prerequisite(s): upper-division standing or consent of instructor. Economic History of the United States from colonial times to the present. Cross-listed with ECON 123.

HISA 126 (E-Z). Topics in United States History (4) Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Selected topics addressing the issues of United States history. K. Issues in United States Labor History.

HISA 130. Gender, Sex, and Sexuality in Early America. (4) Lecture, three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis of early American society from settlement through the mid-eighteenth century. Topics include the emergence of the self-conscious South, the romanticized plantation, American historians and slavery, etc.

HISA 131. Women in American History. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis of early American society from settlement through the mid-eighteenth century. Topics include the emergence of the United States as a global power, the second industrial revolution, the development of a consumer culture, and the creation of a regulatory state.
HISA 142. Northwestern Indian History. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): HIST 075 or HISA 160 or HISA 161 or HISA 164A. The United States-Latin American relations from 1776 to the Good Neighbor Policy. Topics include the Monroe Doctrine, United States expansionism and the Latin American response; the United States-Mexican War; the age of imperialism, 1895-1928.

HISA 164B. The United States and Latin America Since 1930. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): HIST 075 or HISA 160 or HISA 161 or HISA 162 or HISA 163A or HISA 163B. Analysis of United States-Latin American relations from the Good Neighbor Policy to the present. Topics include United States intervention after 1945; Cold War and counterrevolution; crises in Guatemala, Cuba, Chile, Nicaragua, and El Salvador; defining the new enemy after the Cold War.

HISA 165. Modern Brazil: State and Society. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. The history of Mexico since independence. Cross-listed with ETST 183.

HISA 144 (E-Z). Topics in Native American History. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Selected topics addressing the issues of the Native American experience. F Early America: Emerging Interpretations. Cross-listed with ETST 115 (E-Z).

HISA 160. Colonial Latin America. (4) Lecture, three hours; extra reading, two hours, term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. A history of Latin America from the pre-Columbian times to independence with an emphasis upon selected themes concerning the social, economic, and cultural aspects of colonialism.

HISA 161. Nineteenth-Century Latin America. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): HIST 075 or HISA 160 recommended. Topics include the breakdown of political order and the problem of the nation-state; Liberalism and Conservatism; slavery and abolition; foreign intervention and capital investment; the reemergence of political order in the Age of Liberalism (1860-1900); social and cultural change.

HISA 162. Twentieth-Century Latin America. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): HIST 075 or HISA 160 or HISA 161 recommended. Topics include the Gilded Age; the Mexican Revolution; the Great Depression; populism; industrialization; revolution; and the emergence of conservative regimes in the age of neo-liberalism.

HISA 163A. Colonial Mexico. (4) Lecture, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. The history of Mexico to independence.

HISA 163B. Modern Mexico. (4) Lecture, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. The history of Mexico since independence.

HISA 164A. The United States and Latin America to 1930. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): HIST 075 or HISA 160 or HISA 161 or HISA 162 or HISA 163A or HISA 163B. Analysis of United States-Latin American relations from 1776 to the Good Neighbor Policy. Topics include the Monroe Doctrine, United States expansionism and the Latin American response; the United States-Mexican War; the age of imperialism, 1895-1928.

HISA 164B. The United States and Latin America Since 1930. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): HIST 075 or HISA 160 or HISA 161 or HISA 162 or HISA 163A or HISA 163B. Analysis of United States-Latin American relations from the Good Neighbor Policy to the present. Topics include United States intervention after 1945; Cold War and counterrevolution; crises in Guatemala, Cuba, Chile, Nicaragua, and El Salvador; defining the new enemy after the Cold War.

HISA 165. Modern Brazil: State and Society. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. The history of Mexico since independence. Cross-listed with ETST 183.

HISTORY OF EUROPE

UPPER-DIVISION COURSES

HISE 110. Ancient Historians. (4) Lecture, three hours; outside research, two hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. The historical development of historiography as evidenced in ancient historical writings from Near Eastern king lists and biblical histories to the narrative histories of Greece and Rome. Focuses on the ideas of history in the various cultures of the ancient Near East and Mediterranean and their relation to modern historical thought. Cross-listed with LA 100.

HISE 111. Ancient Greece from the Bronze Age to the Persian Wars. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the history of Greece from the late Bronze Age to the end of the Persian Wars. Focuses on the Mycenaean civilization; the rise of the polis in Athens and Sparta; the Ionian Enlightenment; and the Persian Wars.

HISE 112. Ancient Greece from Classical Athens to the Death of Alexander. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the history of Greece from the Persian Wars to the death of Alexander the Great. Focuses on Athens, its empire and democracy, and on the Macedonian Empire of Philip and Alexander. Special attention is given to the Greek cultural achievement within the context of changing political and social conditions.

HISE 115. The Roman Republic. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. The Roman Republic from the third to the seventh centuries B.C. Focuses on prominent figures and moments of crisis as it examines the forces that brought Rome to the forefront of the Mediterranean world.

HISE 116. The Roman Empire. (4) Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the political, economic, institutional, social, and cultural history of the Roman Empire from the first Emperor, Augustus, until the first Christian emperor, Constantine. Focuses on notable figures such as the Julio-Claudian emperors, Nero and Claudius, and on significant periods to help students understand the successes and failures of the Roman Empire.

HISE 117. Decline and Fall of the Roman Empire. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the weaknesses in the Roman Empire that led to its demise, as well as the circumstances in which the new religions and empires came into existence, through a study of the period from the third to the seventh centuries A.D.

HISE 120. Early Middle Ages. (4) Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Topics in medieval history, from the end of classical antiquity to the 11th Century, including Christianity, Islam, the Byzantine Empire, and the barbarians.

HISE 121. The High Middle Ages. (4) Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Topics in medieval history, from the 11th to the 14th century, including the development of medieval institutions, the 12th century Renaissance, and the rise of European universities.

HISE 122. Lord, Peasant, and the Manor in Medieval Europe. (4) Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. The course will give undergraduates a basic historiographic introduction to the medieval estate as a unit of land use, settlement, and lordship. It will be based on secondary literature, a selection of classical works on the medieval estate, and recent revisions of the major themes and models raised by the classical works.

HISE 123. Law and Society in Medieval Europe. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Surveys the legal system of Europe from the late crisis of the Roman Empire to the late fourteenth century. Explores the premedieval legal heritage of Europe (Roman law, early canon law, customary laws of various peoples), transformations of that heritage in the central Middle Ages (revival of Roman and canon law, custom and legislation, use and abandonment of the ordeal), and the relationship between the resulting legal systems and royal authority. Primary sources are the central component of the course materials.

HISE 130. History of Christianity. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. History of Christianity from its origins to the twelfth century, with historical and thematic emphases determined by faculty expertise. Cross-listed with HIST 135.

HISE 131. The Renaissance. (4) Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. The history of Western Europe from 1400-1527 with special attention to Italy.
HISE 132. The Reformation. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. The history of Europe from 1517 to 1618, with special attention to the key events of the continental reformation.

HISE 133. Women Artists in Renaissance Europe, 1400-1600. (4)
Lecture, three hours; individual study three hours. Prerequisite(s): AHS 017B or upper-division standing or consent of instructor. Surveys the lives and work of women artists in Renaissance Europe from perspectives offered by the latest scholarly literature. Key topics considered are circumstances under which it was possible for women to become artists, how these women evolved from artists practicing in the cloistered convent to artists participating in the competitive public market place, what they painted, and who their patrons were. Cross-listed with AHS 165 and WMST 170.

HISE 135. Absolutism and Enlightenment. (4)
Lecture, three hours; extra reading two hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. The development of monarchic absolutism in the 17th and 18th centuries and the intellectual Enlightenment.

HISE 136. The Age of Revolution. (4)
Lecture, three hours; extra reading two hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. The French Revolution and its impact upon Europe from the 1780s through the reign of Napoleon Bonaparte.

HISE 140. Nineteenth-Century Europe. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. The history of Europe from 1815 to 1914. Topics include the Industrial Revolution, the revolutions of 1848, Bismarck and the unification of Germany, the rise of mass politics, imperialism, and the origins of World War I.

HISE 141. Europe, 1914-1945. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. The history of Europe from 1914 to the end of the Second World War. Topics include World War I, the rise of fascism and Communism, the crisis of the Western democracies, the diplomacy of appeasement, World War II, and the Holocaust.

HISE 142. Europe Since 1945. (4)
Lecture, three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor. The comparative social and political history of Europe from 1945 to the present. Topics include the cold war; decolonization; the emergence of the neoliberal welfare state; the Common Market; de Gaulle, Communism and detente; technology and new forms of social protest.

HISE 145. World War I. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the origins of the conflict and its development into the world’s first war and the first total war. Special attention given to the role of technology in the war and to the social consequences of the war.

HISE 146. The Second World War. (4)
Lecture, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. The diplomatic origins of the war; the fighting in Europe, Asia and Africa; Nazi oppression in conquered Europe and the destruction of the Jews; the social, economic and technological impact of the conflict; and the origins of the Cold War.

HISE 148A. Women and Gender in Early Modern Europe, 1348-1800. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Introductory survey of women and gender relations in early modern Europe. Topics include women in the Italian Renaissance, the Protestant and Catholic reformations, the witchcraft persecutions, the Enlightenment, and the French Revolution.

HISE 148B. Women and Gender in Europe, 1800-present. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introductory survey of women and gender in Europe. Topics include changes in gender relations and the roles of women in the family, workplace, and politics; sexuality and science; and the debate over the "woman question."

HISE 150. Ancient and Medieval England. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. A broad but occasionally intensive survey of England from its prehistory to the beginning of the Tudor period (c. 1500). Social and legal developments will be stressed.

HISE 151. England: 1485-1760. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the development of England from the sixteenth century until her emergence as a major power at the accession of George III. An assessment of social, economic, and legal changes as well as important political events.

HISE 152. Modern Britain. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the rise of Great Britain to world domination in the late eighteenth and nineteenth centuries and its subsequent fall from grace in the twentieth century. Special emphasis on major changes in the economy.

HISE 153. History of the Common Law. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the development of the English Common Law beginning with the reign of Henry II and extending into the early eighteenth century. Special attention to the history of the jury.

HISE 155. Tudor England. (4)
Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines sixteenth-century England with particular attention to the impact of the Reformation, the "price revolution," and the development of the state.

HISE 161. Germany from the Middle Ages to Napoleon. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Germany and central Europe (the Holy Roman Empire) from the Golden Bull of 1356 to the dissolution of the Empire in 1806. Special emphasis on cultural developments in the Empire under changing political conditions.

HISE 162. Germany from Bismarck to Hitler. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Germany from Bismarck’s accession as chancellor in 1862 to Hitler’s defeat in 1945, with special attention to the economic underpinnings of the period and the process of social and economic modernization.

HISE 165. Modern France. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of major themes in French history since the Revolution. Topics include the revolutionary tradition, social change in the countryside and city, the Dreyfus Affair, the experience and legacy of two world wars, and May 1968.

HISE 168 (E-Z). Topics in European History. (4)
Lecture, three hours; assignment of remaining hours varies from segment to segment. Prerequisite(s): upper-division standing or consent of instructor. Selected topics addressing the issues of European history.

HISE 171. Early Russia. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Russia from pre-history to the establishment of the Romanov dynasty. Deals with the Savic, Norse, and Asian origins of the Russian state, the impact of the Mongol conquest, the rise of Moscow, and the Time of Troubles in the seventeenth century. Special attention to European vs. Asian influences.

HISE 172. Imperial Russia. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Russia under the Romanov dynasty, 1650-1917. Using the twin themes of absolute monarchy and the rise of revolutionary movements, the course deals with such topics as Peter the Great, autocracy, the nobility, serfdom, the radical intelligentsia, and the origins of the Russian Revolution.

HISE 173. Religion and Nationality in Imperial Russia. (4)
Lecture, three hours; term paper; three hours. Prerequisite(s): upper-division standing or consent of instructor. Introduces students to the great religious, national, and ethnic diversity inside the Russian Empire (1552-1917). Topics include colonial expansion and frontiers; attitudes and policies toward non-Russians; discovery and defense of ethnoreligious identities; nation-building and nationalism; nationality conflicts, violence, and revolution.

HISE 174. Russia Since 1917. (4)
Lecture, three hours; on-line discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Russia from 1917 to the present, with emphasis on the Russian Revolution, the Communist Party, Stalinism, the Great Purges, World War II, and the Kruschev, Brezhnev, and Gorbachev years. Revolutionary change in a traditional society will be a central theme.

HISE 175 (E-Z). Topics in Russian History. (4)
Lecture, three hours; term paper; three hours. Prerequisite(s): HISE 172 or HISE 174 or consent of instructor. Selected topics addressing the issues of Russian history. E. The Stalin Period.

HISE 176. Serbia, Bosnia, and Kosovo: The Contemporary Crisis and its Historical Roots. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Explores historical precedents for the current Yugoslav crisis. Examines the tragic events of the 1990s.
and South Slavic history from the Ottoman conquest to World War II. Focus is on the nation's histories and mythologies of Serbs, Bosnians, and Albanians.

HONORS PROGRAM
See University Honors Program.

HUMAN DEVELOPMENT
Subject abbreviation: HMDV

Barbara J. Tinsley, Ph.D., Chair
Program Office, 2615 Life Sciences Psychology
(909) 787-5386

http://www.psych.ucr.edu/departmental/hmdv.htm

Committee in Charge
Ruth K. Chao, Ph.D. (Psychology)
Mary Guvain, Ph.D. (Psychology)
Ross D. Parke, Ph.D. (Psychology)
Barbara J. Tinsley, Ph.D. (Psychology)
Athena Waite, M.A. (Education)
Patricia O’Brian, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

MAJOR

The Human Development Program offers an interdisciplinary major focusing on the processes and changes that characterize human development. Because the major focus of this course of study is people, graduates typically choose careers involving service to some segment of the population. Such careers might include infant care, preschool management, teaching, counseling, welfare, probation, health delivery, or careers involving the needs of adults or the elderly through community agencies. In addition, by appropriate selection of courses, students may acquire preparation for graduate study in various fields relating to human development, such as psychology, education, and sociology. Human Development majors are advised by the Student Affairs advisor in the Psychology Department (http://www.psych.ucr.edu).

Degree Requirements

University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Biology courses required for the Human Development B.A. degree may also be used in partial fulfillment of college breadth requirements in Natural Sciences and Mathematics.

Because Human Development is an interdisciplinary major, care must be taken in satisfying Social Sciences breadth requirements; consult departmental advisors.

Major Requirements

The major requirements for the B.A. degree in Human Development fall into three categories: foundation requirements, core requirements, and specialization requirements.

Foundation courses (36 units)
1. BIOL 002 or BIOL 003 or BIOL 005A
2. BIOL 034
3. PHYS 007 or PHYS 008 or PHYS 020 or PHYS 021 or CHEM 003
4. GEO 001 or GEO 002 or GEO 003/BIOL 010 or GEO 005 or GEO 008 or GEO 010
5. One 4-unit course from the Computer Sciences, Mathematics, or Statistics departments
6. PSYC 001, PSYC 002
7. One set from:
   a) PSYC 011, PSYC 012
   b) SOC 110A, SOC 110B
   c) EDUC 140 and either PSYC 012 or SOC 110A

Core courses (24 units)
1. Six (6) units from one of the following: (A minimum of two quarters in the same setting is judged necessary to ensure an experience of adequate depth.)
   ANTH 184, EDUC 100A, EDUC 100B, EDUC 106/ HMDV 106/PSYC 106, PSYC 198G, SOC 198G, or SOC 198-L
2. PSYC 130 or PSYC 132 or PSYC 134
3. EDUC 109 or ETST 100 or HMDV 174/SOC 174
4. PSYC 160
5. EDUC 116/HMDV 116
6. HMDV 193

Specialization requirements (12 units or 16 units)
There are four specialization clusters: Diversity, Exceptionality, Psychological, and Social and Cultural Contexts. Students choose either a one-cluster or two-cluster specialization.
For a one-cluster specialization, choose three courses (12 units) from one of the clusters.
For a two-cluster specialization (16 units), choose two courses from two of the clusters:

Note: Courses selected by a student to complete Core may not also be counted as completing Specialization.

1. Diversity: ANTH 131, ANTH 133, ANTH 140 (E-Z); EDUC 109, ETST 100, ETST 113/HISA 134; ETST 121, ETST 122, ETST 124, ETST 131, ETST 137; ETST 164/HMDV 164/PSYC 164, ETST 167/PSYC 167, ETST 168/PSYC 168; ETST 127/SOC 127, ETST 138/SOC 136, ETST 165/SOC 165; SOC 130, SOC 140, SOC 141, SOC 162, SOC 177E, SOC 177F
2. Exceptionality: EDUC 110, EDUC 117/HMDV 117, EDUC 120/HMDV 120, EDUC 129/HMDV 129, EDUC 130/HMDV 130, EDUC 131/HMDV 131
3. Psychological: HMDV 135/PSYC 135, HMDV 161/PSYC 161, HMDV 162/PSYC 162, HMDV 163/PSYC 163 or ANTH 165; PSYC 169
4. Social and Cultural Contexts: ANTH 104, ANTH 107, ANTH 125, ANTH 132, ANTH 144; ANTH 164/LNST 164/WMST 164; ETST 163/SOC 163; HMDV 160/SOC 160, HMDV 174/SOC 174; HMDV 182/SOC 182/URST 182; SOC 142, SOC 144, SOC 175, SOC 183H

Waiver Program for the Multiple Subject Teaching Credential

By completing the Human Development major and taking certain additional specific courses and additional units in specific areas, the Multiple Subject Assessment for Teachers (MSAT) portion of the Praxis II test is waived. (The CBEST must still be taken.) Ask for a copy of the Waiver Program description and worksheet in the Human Development Program office. Students who intend to work toward a teaching credential should read the section in this catalog under Education linked Credential Programs.

UPPER-DIVISION COURSES

HMDV 106. Practicum in Child Development. (4)
Lecture, three hours; practicum, three hours.
Prerequisites: upper-division standing; consent of instructor is required for students repeating the course.
Introduction to sociocultural perspectives of child development. Topics include sociocultural theories of development, motivational aspects of learning, technology in education, and school-home linkages. Application of child development theories and research related to them takes place during fieldwork assignments in an after-school, computer-based program for elementary school students. Course is repeatable. Cross-listed with EDUC 106 and PSYC 106.
HMDV 116. The Exceptional Child. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing. Characteristics of individuals with physical and mental disabilities, emotional disturbance, visual impairments, deaf, or gifted. Emphasizes educational programs and considers the effects of gender, socioeconomic, ethnic, and linguistic factors. Cross-listed with EDUC 116.

HMDV 117. Mental Retardation. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing. The organic and cultural basis of mental retardation. Physical, psychological, emotional, and social development of persons with mental retardation. Covers mild and severe forms of mental retardation. Does not meet requirements for the Special Education Teaching Credential. Cross-listed with EDUC 117.

HMDV 120. Guidance in Special Education. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): EDUC 116/HMDV 116 or consent of instructor. Application of principles and techniques of counseling children with disabilities and their families or guardians. Emphasizes the role of the teacher in educational, personal, and vocational (transition) guidance for exceptional children. Includes materials for working with families from diverse cultural and linguistic backgrounds. Cross-listed with EDUC 120.

HMDV 129. Educational Assessment of Individuals with Disabilities. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): EDUC 116/HMDV 116 or consent of instructor. Principles and techniques of assessment and educational planning for children with disabilities. Includes examination of a broad range of assessment tools for general and special education. Cross-listed with EDUC 129.

HMDV 130. Mild and Moderate Disabilities. (4)
Lecture, three hours; written outside work, three hours. Prerequisite(s): EDUC 116/HMDV 116 or consent of instructor. Explores characteristics, etiology, and identification of individuals with mild and moderate disabilities. History and laws influencing their treatment and education, and current education and transition issues. Includes mild and moderate retardation, learning disabilities, and emotional and behavioral disorders. Cross-listed with EDUC 130.

HMDV 131. Moderate and Severe Disabilities. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): EDUC 116/HMDV 116 or consent of instructor. Explores characteristics, etiology, and identification of individuals with moderate and severe disabilities, history and laws influencing their treatment and education, and current education and transition issues. Includes mental retardation, serious emotional disturbance, and autism. Cross-listed with EDUC 131.

HMDV 135. Psycholinguistics. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012, or equivalents; or consent of instructor. Introduction to psycholinguistics emphasizing the psychological implications of linguistic theory; including the effect of syntactic structure on the comprehension, production, and retention of speech; the processes of language acquisition and models of the adult language user. Cross-listed with PSYC 135.

HMDV 150. Human Micro-evolution. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): ANTH 002 or ANTH 002H, relevant preparation in the life sciences; or consent of instructor. The methods of classical and population genetics applied to the understanding of evolution and variation in contemporary human populations. Cross-listed with ANTH 150.

HMDV 160. Sociology of Education. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Comparative analysis of educational institutions in complex societies and their relationship to the society's political and economic structure with an examination of the school as a societal subsystem consisting of teacher, student, and administrator roles and its own evolving subculture. Cross-listed with SOC 160.

HMDV 161. Personality Development. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. Study of the development of human personality from birth through late adolescence. Emphasis is on the impact of interpersonal relationships on the acquisition of human traits, emotional reactions, and patterns of adjustment. Cross-listed with PSYC 161.

HMDV 162. Perceptual Development. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. An analysis of theoretical and experimental approaches to perceptual development, with primary emphasis on human development. Cross-listed with PSYC 162.

HMDV 163. Cognitive Development. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. An analysis of the intellectual development of the child from birth to maturity mechanisms of intellectual growth, and the relationship between language development and cognitive development. Cross-listed with PSYC 163.

HMDV 164. Personality Development in Chicano Children. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 002. The affective and intellectual aspects of personality development as they pertain to the Chicano child will be extensively discussed and analyzed. The problems and rewards of an individual's identification with two cultures will be examined in detail. Cross-listed with ETST 164 and PSYC 164.

HMDV 174. Socialization and Personality. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 001 or consent of instructor. An analysis of socialization from various theoretical perspectives with emphasis on the impact of patterns of child rearing on personality development. Treatment will be historical and cross-cultural, with particular attention to the relationship among family structure, social structure, and socialization processes. Cross-listed with SOC 174.

HMDV 182. Urban Problems. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. An interdisciplinary examination of selected urban problems such as civil disorders, transportation, housing, welfare, and planning. Cross-listed with SOC 182 and URST 182.

HMDV 193. Senior Seminar in Human Development. (2)
Seminar, two hours. The goal of the seminar is to provide those students who are in their last or next-to-last quarter a summary experience in which they are exposed to a variety of developmental topics. In consultation with the instructor, each student will prepare a project for presentation to the seminar. The seminar may be a significant extension of a paper prepared for a previous course or a new reading or research project developed for the seminar.
If students are changing majors, they should petition for a change in major after their interdisciplinary program has been approved by the committee. Every subsequent change in the student's initial program must be approved by the advisor; a record of the program and of program changes is kept in the student's files.

**Interdisciplinary Option**

The interdisciplinary option is built around a central concept in humanities and social sciences. The concept might be a specific culture, country or ethnic group such as French civilization and culture; an age or period such as the Renaissance or the industrial revolution; a great social issue or human problem such as war; revolution, communication; or any other topic which receives significant attention from several disciplines.

**Two-Field Option**

In special circumstances the committee sponsors a two-field option for the major designed to allow students to combine studies in two disciplines. Such majors are approved only if they cannot be accommodated within a dual major or within the Liberal Studies Program.

**Degree Requirements**

**University Requirements**

See the [Undergraduate Studies Section](#) for requirements that all students must satisfy.

**College Requirements**

See [Degree Requirements](#), College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

**Major Requirements**

The major requirements for the B.A. degree in Humanities, Arts, and Social Sciences are as follows. Students may choose either an interdisciplinary or a two field option.

**Interdisciplinary Option**

1. Upper-division requirements (38-unit minimum)
   a. A minimum of 32 units directly related to the chosen central concept
   b. At least 6 units (but not more than 8 units) HMSS 195 and/or HMSS 196
2. The Committee may require upper-division courses beyond those indicated above if the topic of study requires specific language, quantitative, or methodological proficiency.

**Two-Field Option**

1. Upper-division requirements (56 units)
   2. The committee may require upper-division courses beyond those indicated above if the topic of study requires specific language, quantitative, or methodological proficiency.

Note: The senior thesis or research paper is the culmination of the major and represents an interdisciplinary approach to the central concept of the major. HMSS 195 (Senior Thesis) and HMSS 196 (Senior Research Paper) are supervised by a faculty advisor and designed to bring into focus a substantial portion of the major.

The following are sample interdisciplinary programs:

**Revolution**

- ANTH 127, ECON 115A or ECON 115B, HIST 104, HISE 174, POSC 112, PHIL 176, PHIL 185, HMSS 195 (8 units).

**Renaissance**

- AHS 161, CPTL 150, ENGL 153, 154, FREN 155, HISE 131, MUS 101A, SPN 140 (E-Z), HMSS 195 (8 units).

**Two-field Option**

- Twenty-eight (28) units in each of two fields, supervised by a faculty advisor.

**Degree Requirements**

**University Requirements**

See the [Undergraduate Studies Section](#) for requirements that all students must satisfy.

**College Requirements**

See [Degree Requirements](#), College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

**Major Requirements**

The major requirements for the B.A. degree in Humanities, Arts, and Social Sciences are as follows. Students may choose either an interdisciplinary or a two field option.

**Interdisciplinary Option**

1. Upper-division requirements (38-unit minimum)
   a. A minimum of 32 units directly related to the chosen central concept
   b. At least 6 units (but not more than 8 units) HMSS 195 and/or HMSS 196
2. The Committee may require upper-division courses beyond those indicated above if the topic of study requires specific language, quantitative, or methodological proficiency.

Note: The senior thesis or research paper is the culmination of the major and represents an interdisciplinary approach to the central concept of the major. HMSS 195 (Senior Thesis) and HMSS 196 (Senior Research Paper) are supervised by a faculty advisor and designed to bring into focus a substantial portion of the major.

The following are sample interdisciplinary programs:

**Revolution**

- ANTH 127, ECON 115A or ECON 115B, HIST 104, HISE 174, POSC 112, PHIL 176, PHIL 185, HMSS 195 (8 units).

**Renaissance**

- AHS 161, CPTL 150, ENGL 153, 154, FREN 155, HISE 131, MUS 101A, SPN 140 (E-Z), HMSS 195 (8 units).

**Two-field Option**

1. Upper-division requirements (56 units)
   2. The committee may require upper-division courses beyond those indicated above if the topic of study requires specific language, quantitative, or methodological proficiency.

**LOWER-DIVISION COURSES**

**HMSS 001. Step-by-Step to College Success for Freshmen.** (2)

Lecture, one hour; discussion, one hour. Prerequisite(s): none. Weekly readings, writing assignments, and class discussions dealing with factors relating to academic success. Topics include social and psychological adjustment to college life. Students investigate a wide range of academic disciplines and campus student support services. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of HMFG 010A, HMSS 001, or HMSS 002.

**HMSS 002. Step-by-Step to College Success for Transfer and Reentry Students.** (2)

Lecture, one hour; discussion, one hour. Prerequisite(s): none. Weekly readings, writing assignments, and class discussions dealing with factors relating to academic success. Topics include social and psychological adjustment to college life. Students investigate a wide range of academic disciplines and campus student support services. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of HMFG 010A, HMSS 001, or HMSS 002.

**HMSS 003. Step-by-Step to College Success: Expanded Horizons.** (1)

Lecture, one hour; discussion, one hour. Prerequisite(s): HMSS 001 or HMSS 002 or consent of instructor. An investigation of strategies for the development of critical thinking processes. Students intensively explore selected topics initially presented in HMSS 001 or HMSS 002. Emphasis is on the developments of academic and career goals. Includes weekly reading and writing assignments. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of ANTH 181G or HMSS 003.

**HMSS 005. Library Research Strategies.** (2)

Lecture, two hours. Prerequisite(s): second-quarter freshman or beyond. An introduction to library research strategies and resources which will give students knowledge necessary for self-sufficient study on the college level and beyond. Emphasis will be placed on development of appropriate research strategies utilizing integrated knowledge of resources available.

**HMSS 021A. Asian/Americans Making Culture: Religion.** (4)

Lecture, three hours; extra reading, three hours. Prerequisite(s): none. Explores the movement of Asian religions to America and the creation of new modes of religious expression. This course is the first of three in a yearlong, multidisciplinary sequence about the making of culture in Asian/American communities. Students are encouraged, but not required, to take HMSS 021B and HMSS 021C.

**HMSS 021B. Asian/Americans Making Culture: Literature.** (4)

Lecture, three hours; extra reading, three hours. Explores how Asian/Americans create a distinctive print culture through poetry, short stories, novels, and magazines. This course is the third of three in a yearlong, multidisciplinary sequence about the making of culture in Asian/American communities. Students are encouraged, but not required, to take HMSS 021A and HMSS 021C.

**HMSS 021C. Asian/Americans Making Culture: Music.** (4)

Lecture, three hours; extra reading, three hours. Explores how Asian/Americans create a distinctive print culture through poetry, short stories, novels, and magazines. This course is the third of three in a yearlong, multidisciplinary sequence about the making of culture in Asian/American communities. Students are encouraged, but not required, to take HMSS 021A and HMSS 021B.

**HMSS 021D. The 1960s and the Vietnam Era.** (4)

Lecture, three hours; screening, three hours. Prerequisite(s): none. Explores the political, social, economic, and cultural impact of the Vietnam War, with an introduction to economic, historical, and cultural methods of analysis. This course is the first of three in a yearlong, team-taught, interdisciplinary sequence. This course fulfills either the Humanities (Additional) requirement for the College of Humanities, Arts, and Social Sciences.

**HMSS 021E. The 1960s and the Vietnam Era.** (4)

Lecture, three hours; screening, three hours. Prerequisite(s): HMSS 001 or consent of instructor. Examines the political, social, economic, and cultural impact of the Vietnam War, with an introduction to economic, historical, and cultural methods of analysis. This course is the second of three in a yearlong, multidisciplinary sequence about the making of culture in Asian/American communities. Students are encouraged, but not required, to take HMSS 021A and HMSS 021C.

**HMSS 021F. The 1960s and the Vietnam Era.** (4)

Lecture, three hours; screening, three hours. Prerequisite(s): HMSS 001 or consent of instructor. Examines the political, social, economic, and cultural impact of the Vietnam War, with an introduction to economic, historical, and cultural methods of analysis. This course is the second of three in a yearlong, multidisciplinary sequence about the making of culture in Asian/American communities. Students are encouraged, but not required, to take HMSS 021A and HMSS 021C.

**HMSS 021G. The 1960s and the Vietnam Era.** (4)

Lecture, three hours; screening, three hours. Prerequisite(s): HMSS 001 or consent of instructor. Examines the political, social, economic, and cultural impact of the Vietnam War, with an introduction to economic, historical, and cultural methods of analysis. This course is the second of three in a yearlong, multidisciplinary sequence about the making of culture in Asian/American communities. Students are encouraged, but not required, to take HMSS 021A and HMSS 021C.

**HMSS 021H. The 1960s and the Vietnam Era.** (4)

Lecture, three hours; screening, three hours. Prerequisite(s): HMSS 001 or consent of instructor. Examines the political, social, economic, and cultural impact of the Vietnam War, with an introduction to economic, historical, and cultural methods of analysis. This course is the second of three in a yearlong, multidisciplinary sequence about the making of culture in Asian/American communities. Students are encouraged, but not required, to take HMSS 021A and HMSS 021C.
UPPER-DIVISION COURSES

HMSS 190. Special Studies. (1-5)
Conference. Prerequisite(s): consent of the Humanities, Arts, and Social Sciences Interdisciplinary Committee. Directed interdisciplinary study.

HMSS 195. Senior Thesis. (1-8)
Prerequisite(s): enrollment by request of student with approval of the advisor and the Humanities, Arts, and Social Sciences Interdisciplinary Committee. For honors students who may need one or more quarters to complete the research and writing of a senior thesis. Course is repeatable to a maximum of 12 units.

HMSS 196. Senior Research Paper. (1-4)
Prerequisite(s): consent of advisor.

HMSS 198-L. Internship. (1-12)
Internship, ten hours a week for each four units. Prerequisite(s): upper-division standing and approval of Committee on Independent Student Projects. A student-defined project, the major portion of which is taken off campus. May be supervised by an off-campus instructor and/or UCR advisor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units. Does not fulfill University breadth requirements.

INTERNATIONAL RELATIONS MINOR

Steven Helfand, Ph.D., Chair
Office, 109 Highlander Hall, Building B
(909) 5037, x1572

Committee in Charge
Steven Helfand, Ph.D. (Economics)
Andrew Kjeld, Ph.D. (Political Science)
Irwin M. Wall, Ph.D. (History)
Patricia O’Brien, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The International Relations minor offers a basic examination of the major approaches, disciplines, and perspectives of international relations. The study of international relations is necessarily interdisciplinary, focusing on economic, geographic, historical, and political issues and questions.

The International Relations minor is helpful in preparing students for the many careers in the international arena.

Requirements for the minor (28 units)
1. Eight (8) units from HISA 117B, HISE 142, HISE 146, HISA 164B, HISE 174, HIST 182
2. Eight (8) units from ECON 113, ECON 171, ECON 175, ECON 178/BSAD 178, ECON 179, ECON 181, ECON 182, ECON 183, ECON 185
3. POSC 124
4. Eight (8) units from POSC 125, POSC 126, POSC 128, POSC 129, POSC 155, POSC 160A, POSC 160B, POSC 163

A minor is a set of courses focused on a single discipline or an interdisciplinary thematic area. There can be no substitution for the courses listed as constituting a minor without approval of the governing department or committee. There is no limit on the number of minors a student can declare. Students must declare the minor(s) before their final degree check before graduation, by completing a petition with the College of Humanities, Arts, and Social Sciences Student Affairs Office, the College of Natural and Agricultural Sciences Student Affairs Office, or the College of Engineering Student Affairs Office depending on their major. Prior approval by the department or committee offering the minor is required. The minor is noted on the transcript at the time the degree is conferred.

See minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

JOURNALISM MINOR

Christopher Buckley, M.F.A., Chair
Office, 2116 W Atkins Hall
(909) 787-2414

Committee in Charge
Christopher Buckley, M.F.A. (Creative Writing)
Patricia O’Brien, Ph.D. (History)
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The Minor in Journalism program is not currently accepting new students. Please contact the Creative Writing Department for current information on status.

LATIN AMERICAN STUDIES

Subject abbreviation: LS

Michael Kearney, Ph.D., Chair
Office, 1334 W Atkins Hall
(909) 787-5524
http://www.ucr.edu/CHSS/depts/la/JSucr.htm

Committee in Charge
Eugene A. Anderson, Ph.D. (Anthropology)
Alvin Arrington, Ph.D. (Ethnic Studies)
Etna M. Bonaccich, Ph.D. (Ethnic Studies/Sociology)
James P. Brennan, Ph.D. (History)
Peter Briscoe, M.L.S., M.A. (Rivera Library)

Edgar W. Butler, Ph.D. (Sociology)
Marcelle Chauvet, Ph.D. (Economics)
Ronald H. Chicoine, Ph.D. Emeritus (Economics)
Carlos E. Cortés, Ph.D. Emeritus (History)
Scott L. Fedick, Ph.D. (Anthropology)
Alfredo Figueroa, B.A. (Chicanos Student Programs)
E. Mark Hanson, Ph.D. (Education/Management)
Steven Helfand, Ph.D. (Economics)
William W. Megrenney, Ph.D. (Hispanic Studies)
Carlos Morton, Ph.D. (Theatre)
Luis H. Paredes, Ph.D. (Hispanic Studies)
Robert W. Patch, Ph.D. (History)
Marina Pianca, Ph.D. (Hispanic Studies)
David S. Pion-Berlin, Ph.D. (Political Science)
Karl A. Taube, Ph.D. (Anthropology)
Devra A. Weber, Ph.D. (History)

Patricia O’Brien, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

MAJOR

Latin American Studies is an interdisciplinary, area studies major, developed to allow a combination of many different yet related disciplines. This interdisciplinary focus permits the student to study anthropology, economics, geography, history, sociology, languages and cultures of a particular region in order to gain a broader understanding of a complex world area.

The Latin American Studies major provides great flexibility to explore a wide range of subjects of particular interest — from religious cults in the Caribbean to the dynamics of agrarian reform in rural Mexico. This flexibility allows the possibility of completing a double major with other departments, for example, Latin American Studies and History, Latin American Studies and Spanish, Latin American Studies and Political Science.

UCR is a member of the Southern California Conference on International Studies (SOCCIS) and participates actively in the Latin American Studies section of it. As part of this program, UCR students have the opportunity to participate in an Interdisciplinary Seminar on Latin American Studies, which is offered once a year on the campus of a member institution. The seminar content varies from year to year.

Career Opportunities

The Latin American Studies major presents numerous opportunities after graduation. The interdisciplinary nature of the program prepares the student for further study in any number of academic fields at the graduate level. The B.A. degree itself is valuable preparation for many careers, including the U.S. diplomatic service, international organizations abroad, large overseas corporations, banking, foreign missions, agriculture, and teaching.
International Relations / Journalism / Latin American Studies / Law and Society / 275

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The major requirements for the B.A. degree in Latin American Studies are as follows:

1. Lower-division requirements
   a) Proficiency in Spanish to the SPN 005 level or in Portuguese to the level of PORT 004
   b) Additional course work in Spanish and/or Portuguese recommended for students interested in careers in Latin American fields

2. Upper-division requirements (36 units)
   a) At least two courses in three of the following groups, or two courses in two groups and one in each of the other two groups (24 units total):
      (1) ANTH 115S, ANTH 140S
      (2) HISA 160, HISA 161
      (3) LNST 118A-LNST 118B
      (4) POSC 162, POSC 163
   b) Twelve (12) units selected from a list of committee-approved upper-division Latin American Studies related courses available in the program office

Minor

Latin American Studies offers a minor consisting of 20 upper-division units.

To complete the requirements for the minor, students must select five courses from three of the following groups:

1. ANTH 115S, ANTH 140S
2. ECIN 113
3. HISA 160, HISA 161
4. LNST 118A-LNST 118B
5. POSC 162, POSC 163
6. SPN 120A-SPN 120B-SPN 120C

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

UPPER-DIVISION COURSES

LNST 118A-LNST 118B. Survey of Latin American Culture and Civilization. (4-4)
Lecture, three hours; read and consult, one hour. 118A: from pre-Columbian period to independence; 118B: modern period. No knowledge of Spanish necessary. Credit is awarded for only one of LNST 118A-LNST 118B or SPN 102B.

LNST 153. Contemporary Latin American and Chicano Novels. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Emphasis on contemporary issues affecting the Caribbean, and the struggle of its people to maintain their identities. Cross-listed with ANTH 168 and ETST 153.

LNST 164. Gender and Development in Latin America. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Discusses the role and contribution of Latin American and Caribbean women within their societies. The effects of national economic development policies upon their status and their participation in and integration into the policy-making process are emphasized. Cross-listed with AMTH 164 and WMST 164.

LNST 165. Caribbean Culture and Society. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of the Caribbean region from a historical, cultural, and political perspective. Emphasis on contemporary issues affecting the Caribbean, and the struggle of its people to maintain their identities. Cross-listed with AMTH 165 and ETST 153.

LNST 166. People and the Environment in Latin America. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An interdisciplinary course focusing on the study of the relationship between human communities and the environment in Latin America. Environmental problems and policies are examined. Cross-listed with ANTH 166.

LNST 190. Special Studies. (1-5)
Consent of the instructor and the Latin American Studies Committee required.

LAW AND SOCIETY

Subject abbreviation: LW SO

Steven E. Clark, Ph.D., Chair
Committee Office, 1604 Humanities and Social Sciences; (909) 787-5208

Committee in Charge
Steven E. Clark, Ph.D. (Psychology)
Carl F. Cranor, Ph.D. (Philosophy)
Steven Cullenberg, Ph.D. (Economics)
Piotr Gorecki, Ph.D. (History)
John C. Lauren, Ph.D. (Political Science)
Sonja Lyubomirsky, Ph.D. (Psychology)
Robert Nash Parker, Ph.D. (Sociology)

Austin T. Turk, Ph.D. (Sociology)
Chair, Dean, College of Humanities, Arts, and Social Sciences, ex officio

MAJOR

Law stands at the heart of a free society, channeling behavior and ensuring areas of free human choice. All of us are aware, at least vaguely, of the importance of law in our daily lives. We speak of rights and duties, freedom and order, justice and injustice. The importance of law as a concept is reflected in the number of disciplines in the University which study and teach law and law-like relationships, disciplines ranging throughout the Humanities and Social Sciences.

The Law and Society major offers undergraduates an interdisciplinary liberal arts approach to the study of legal and law-like relationships and institutions. The program combines the perspectives of various disciplines in the Humanities and Social Sciences. The multidisciplinary approach serves several purposes. It introduces students to a wider range of views about law than is generally possible within a single department. It provides a coherent and rigorous program of courses organized around the theme of law and law-like relationships. It provides a way of developing critical and analytical thinking on the part of students concerning various ideas associated with law and social institutions.

The Law and Society curriculum should be of educational benefit to students who do not plan to pursue graduate studies as well as to those who plan to take graduate work following their bachelor degree studies. For the former, this program offers one means of understanding some complex relationships between social institutions. For the latter, the breadth of course work in Law and Society should provide a sound basis for graduate studies in areas related to law, history, philosophy, political science, and sociology, among others. In addition, the Law and Society curriculum should be a sound background for students who later choose to pursue the study of law in a professional school of law.

Students may select Law and Society as a major with the departments of Anthropology, Economics, History, Philosophy, Political Science, and Sociology.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.
College Requirements

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The major requirements for the B.A. degree in Law and Society are as follows:

1. Specified requirements of the cooperating department (See the departments of Anthropology, Economics, History, Philosophy, Political Science, or Sociology)
2. Requirements for Law and Society (36 units)
   a) PHIL 007 or PHIL 007H
   b) LWSO 100
   c) One course chosen from the following list: ECON 111, PSYC 012, SOC 110A, POSC 114 (or equivalent course in research methods)
   d) Five courses chosen from the following list: ANTH 127, ECON 119, HISE 153, PHIL 183, POSC 167, SOC 159 (One of these courses may be replaced by a substitute choice from a list of courses published annually by the Law and Society Faculty Committee. Not more than two of the courses taken to meet this requirement [2,d] may be from the same department.)
   e) LWSO 193, Senior Seminar

Note: In filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements (specified departmental requirements and Law and Society requirements).

UPPER-DIVISION COURSES

LWSO 100, Introduction to the Study of Law and Society. (4)
Lecture, two hours; reading and library work, one hour. Prerequisite(s): none. An introduction to the interdisciplinary study of the role of law and legal institutions in society. Examines the role of criminal, tort, contract, constitutional or other areas of law from the perspective of several disciplinary perspectives.

LWSO 193, Senior Seminar in Law and Society. (4)
Seminar, three hours; term paper, three hours. Prerequisite(s): LWSO 100; senior standing in Law and Society. Aims to synthesize multidisciplinary perspectives and knowledge provided by other courses in the Law and Society Program through readings, group discussion, and research on an issue or problem in the law and society. Covers topics such as law and morality, law and social change, law and religion, and law and culture. Satisfactory (S) or No Credit (NC) grading is not available.

LESBIAN, GAY, AND BISEXUAL STUDIES MINOR

Subject abbreviation: LGBS

George E. Haggerty, Ph.D., Chair
Office, 2209 Humanities and Social Sciences
(909) 787-5301, x1940
http://www.ucr.edu/CHSS/depts/english/lgb/lgbhome.html

Committee in Charge
Alicia Arrizon, Ph.D. (Ethnic Studies)
Gregory W. Bredbeck, Ph.D. (English)
Philip Brett, Ph.D. (Music)
Richard Godbeer, Ph.D. (History)
George E. Haggerty, Ph.D. (English)
Masako Ishii-Kantz, Ph.D. (Sociology)
Ethan Nesperdlin-Longo, Ph.D. (Music)
Amy A. Ogore, Ph.D. (English)
Sharon V. Salinger, Ph.D. (History)
Erika Sudergur, M.F.A. (Art)
Carole-Anne Tyler, Ph.D. (English)
Patricia O’Brien, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The program reflects current critical, theoretical, and methodological developments across several disciplines that focus on Lesbian, Gay, and Bisexual issues. Lesbian, Gay, and Bisexual Studies are by nature interdisciplinary, and this program is meant to encourage new cross-disciplinary research in the field for interested students in the College of Humanities, Arts, and Social Sciences. Taken as a whole, the curriculum will address such issues as: sexual identity and orientation; Gay, Lesbian, and Bisexual representation; Gay, Lesbian, and Bisexual perspectives on the arts; retheorizations of gender, sexuality and cultural diversity, intersections of sexualities and ethnic identities.

Requirements for the minor (24 units)
1. Lower-division requirements (4 units):
   a) WMST 001
2. Upper-division requirements (20 units):
   a) Four (4) units of English: ENGL 122, ENGL 140US, ENGL 140GG, or ENGL 143 (E-Z)/FVC 143 (E-Z)
   b) Four (4) units of HISA 130/WMST 130, or ETST 124
   c) Four (4) units of AHS 182 or AHS 186/FVC 186; or DNCE 141 or DNCE 142
   d) Four (4) units of PSYC 160 or PSYC 161/HMDV 161; or SOC 177E or SOC 177F; or LGBS 198-I
   e) Four (4) units from those listed above

A minor is a set of courses focused on a single discipline or an interdisciplinary thematic area. There can be no substitution for the courses listed as constituting a minor without approval of the governing department or committee. There is no limit on the number of minors a student can declare. Students must declare the minor(s) before their final degree check before graduation, by completing a petition with the College of Humanities, Arts, and Social Sciences Student Affairs Office, the College of Natural and Agricultural Sciences Student Affairs Office, or the College of Engineering Student Affairs Office depending on their major. Prior approval by the department or committee offering the minor is required. The minor is noted on the transcript at the time the degree is conferred.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies Section of this catalog for additional information on minors.

UPPER-DIVISION COURSE

LGBS 198-I. Individual Internship. (1-12)
Consultation, one hour; internship, two to twenty-four hours; term paper, one to eleven hours. Prerequisite(s): upper-division standing or consent of instructor. Internship in a community or campus outreach program related to lesbian, gay, and bisexual studies. The internship is supervised by a faculty member teaching in the Lesbian, Gay, and Bisexual Studies minor and the agency or program coordinator. A final paper is required. Course is repeatable to a maximum of 8 units.

LIBERAL STUDIES

Henry W. Decker, Ph.D., Chair
Committee Office, 2417 Humanities and Social Sciences (909) 787-3683

Committee in Charge
Henry W. Decker, Ph.D. (French)
Howard S. Friedman, Ph.D. (Psychology)
Albert L. Page (Environmental Sciences)
Louis A. Pedrotti, Ph.D. (Russian)
Athena Waite, Ph.D. (Education)
Patricia O’Brien, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

MAJOR

The Liberal Studies interdisciplinary major offers a broad liberal education. The first two years introduce students to the traditional areas of learning and attempt to provide them with an understanding of their interrelationships. During the junior and senior years, students select at least two fields of concentration. The purpose is to provide a focus for students’
Educational interests that enables them to acquire competence in the%0Amethodology and goals of two fields of concentration by extending and deepening investigations begin during the%0Afirst two years.

Concentration requirements are sufficiently flexible to enable students to prepare for graduate or professional school training as well as to pursue their interests in other areas.

**Preparation for Teaching.** The Liberal Studies Program works with the Graduate School of Education to guide prospective teachers in their academic and preprofessional preparation. In addition to the major, students planning to teach in elementary school have the option of completing the Liberal Studies subject-matter preparation program. This state-approved program waives the subject-matter proficiency examination (MSAT) otherwise required for the multiple-subject credential.

Interested students should consult their advisor as early as possible, as the waiver must be completed before graduation.

With careful planning, using many of the same courses, prospective elementary teachers can complete the approved subject-matter program along with their Liberal Studies major while also including basic course work in Education and early field experience in the schools.

**Degree Requirements**

**University Requirements**

See the [Undergraduate Studies section](#) for requirements that all students must satisfy.

**College Requirements**

See [Degree Requirements](#), College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

**Major Requirements**

The major requirements for the B.A. degree in Liberal Studies are as follows:

1. **Lower-division requirements**
   a) Foreign Language or Mathematics from one of the following:
      1. Achievement of proficiency at the 5th quarter level in one foreign language
      2. Achievement of proficiency at the 4th quarter level in one foreign language and LIN 020
      3. Completion of a year (12 units minimum) of college-level mathematics from MATH 009A-MATH 009B, plus one from
         MATH 009C, MATH 023, CS 008 or STAT 048
      4. MATH 022, MATH 023, plus CS 008 or STAT 048
   b) Pre-Concentration requirement: 64 units from the following groups of courses with a minimum of 12 units in each group

   **Group I**
   - BCH 010
   - BIOL 002, BIOL 003, BIOL 005A, BIOL 005B, BIOL 005C, BIOL 030, BIOL 034, BIOL 040
   - BPC 031
   - CHEM 001A-CHEM 001B-CHEM 001C, or CHEM 01HA-CHEM 01HB-CHEM 01HC, CHEM 003, CHEM 005
   - GEO 001, GEO 002, GEO 003/BIOL 010, GEO 004, GEO 005, GEO 008
   - ENMT 010, ENMT 020
   - ENSC 001, ENSC 002
   - PHYS 002A, PHYS 002B, PHYS 002C, PHYS 021A-PHYS 021B-PHYS 021C, PHYS 007, PHYS 008, PHYS 020
   - PHYS 021, PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D

   **Group II**
   - ANTH 001, ANTH 002, ANTH 003, ANTH 004, ANTH 005, ANTH 010, ANTH 020, ANTH 030
   - ECON 001, ECON 002, ECON 003
   - ECON 006/ENSC 006
   - ETST 001, ETST 002, ETST 003, ETST 005, ETST 007
   - ETST 004/HIST 004
   - HIST 010, HIST 015, HIST 017A-HIST 017B, HIST 020, HIST 025, HIST 026, HIST 030, HIST 033, HIST 035, HIST 036, HIST 060, HIST 061/ETST 061
   - PED 044
   - POSC 005, POSC 010, POSC 015, POSC 020
   - PSYC 001, PSYC 002
   - SOC 001, SOC 003, SOC 015
   - SOC 010/URST 010
   - WMST 001, WMST 020

2. **Upper-division requirements** (40-unit minimum)

By the beginning of the sixth quarter after 76 units of credit have been accumulated choose two areas of concentration.

**First Area of Concentration**

Minimum of twenty-four (24) upper-division units from one of the departments or programs in the following List A:

**List A:** Anthropology, Art History, Biology, Chemistry, Classical Studies, Comparative Literature, Computer Science, Dance, Earth Science (Geography, Geology, Geophysics), Economics, English, Entomology, Environmental Sciences, French, German, History, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Religious Studies, Russian Studies, Sociology, Spanish, Statistics, Theatre
Second Area of Concentration

Sixteen (16) complementary upper-division units chosen from one subject area from List A cited previously or from the following List B. No overlap between major and minor concentrations allowed.

List B: Administrative Studies, Asian Studies, Biochemistry, Creative Writing, Education, Ethnic Studies, Film and Visual Culture, Human Development, Latin American Studies, Linguistics, Performing Arts (Art, Dance, Music, Theatre), Soil Sciences, Urban Studies, Women’s Studies

Note: A maximum of 4 units of 190-199 courses may be used between the two areas of concentration. Students must submit a written proposal for advisor’s approval prior to enrolling in the course. All courses taken in the two areas of concentration must be taken for letter grades.

The courses required for each area of concentration are based on departmental recommendations. When the two areas have been chosen, students must obtain the approval of a member of the Liberal Studies Committee. For information call (909) 787-3683.

THE SCHOOL

The A. Gary Anderson Graduate School of Management offers a professional graduate program leading to the degree Master of Business Administration (MBA). The course of study provides a balanced approach to the art and science of management, with an emphasis on managing through information, and recognizes the global context of management in today’s business world. The program is open to eligible students from all undergraduate majors. Quantitative methods (business calculus, linear algebra) is a prerequisite to the program. Qualified students who have not taken this prerequisite course may be admitted, but must meet this requirement during their first two quarters in residence.

The MBA program can be completed in two years on a full-time basis or in three to four years on a part-time basis. In the 92-unit program (23 courses), all students take 48 units in a common body of knowledge which consists of courses in statistics, managerial economics, financial accounting, organizational behavior, management science, computer systems, finance, marketing, business and society, and management synthesis. Students select two of the following courses to complete common body of knowledge requirements: human resources management, cost and management accounting, operations management. Thereafter, students complete a required internship, 28–36 units selected from electives, a capstone business strategy course, and a thesis or case project. All students also must complete a major software packages in the areas of statistics, data bases, spreadsheets, financial planning, management science, econometrics, graphics, and word processing.

Within the School, the facility is utilized for teaching, class demonstrations, theses, and research projects. Students learn computing skills in an introductory workshop available each quarter, in AGSM courses with special computing requirements, and in optional seminars.

The UCR Library, with more than 1.8 million bound volumes, 13,000 serials, and 1.6 million microforms, including extensive literature in the management field, provides substantial support for student and faculty research.

An MBA Student Association represents student interests at faculty meetings and arranges student activities. Student evaluations of courses are an important part of the evaluation of both curriculum and faculty performance. An active placement program is maintained to help students enter their profession upon graduation.

GRADUATE PROGRAM

The A. Gary Anderson Graduate School of Management offers a professional graduate program leading to the degree Master of Business Administration (MBA). The course of study provides a balanced approach to the art and science of management, with an emphasis on managing through information, and recognizes the global context of management in today’s business world. The program is open to eligible students from all undergraduate majors. Quantitative methods (business calculus, linear algebra) is a prerequisite to the program. Qualified students who have not taken this prerequisite course may be admitted, but must meet this requirement during their first two quarters in residence.

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Graduate courses

MGT 200. Managing Behavior in Organizations. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): MGT 404 or consent of instructor. Examines human behavior in organizations and its implications for management decisions and actions. Explores the theory and practice of working with and managing people. Topics include motivation, learning, group dynamics, leadership, communication, organizational structure and culture.

MGT 201. Statistics for Management. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): MGT 403 or equivalent; familiarity with Microsoft Excel spreadsheet software. Teaches how to generate decision-making information from data and solve management problems using common computer tools. Covers problem identification and formulation, model selection and use, and interpretation of the results of statistical analysis. Topics include estimation, hypothesis testing, analysis of variance, simple and multiple regression, time series and forecasting. May not be taken for degree credit by students in Statistics undergraduate or graduate programs. Cross-listed with STAT 232.

MGT 202. Financial Management. (4)
Lecture, three hours; outside projects and extra reading, three hours. Prerequisite(s): MGT 201/STAT 232, MGT 211, or equivalents. Examines primary corporate finance theories and how to use them to solve problems. Topics include time value of money, net present value analysis, security valuation, portfolio theory and asset pricing models, capital budgeting decision, dividend policy, capital structure decision, mergers and acquisitions, and multinational financial management.

MGT 203. Managerial Economics. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): MGT 403 or equivalent. Studies the micro-, macro-, and global economic environments of managerial decisions. Topics include demand and supply, production and cost functions, competition, labor supply, national income accounting, aggregate output, interest rates, fiscal and monetary policy, inflation, economic growth and business cycles, exchange rates, and international relationships in trade and finance.

MGT 204. Cost and Management Accounting. (4)
Lecture, three hours; outside projects, three hours. Prerequisite(s): MGT 211 or equivalent. A study of accounting information for managerial planning and control. Topics include managerial applications for product costing, budgeting, and performance evaluation, accounting techniques for modern manufacturing systems, activity-based accounting and cost management, international cost accounting systems, and the behavioral implications of accounting information.

MGT 205. Computer Systems for Management. (4)
Lecture, three hours; laboratory, one hour; outside projects and reading, two hours. Prerequisite(s): graduate standing; familiarity with basic computer operations and software packages. Examines the operation and management of information systems as applied to the business environment. Topics include hardware, software, data bases, decision support, and systems analysis. Software packages are used to integrate information systems concepts and business applications.

MGT 206. Introduction to Management Science. (4)
Lecture, three hours; outside projects and readings, three hours. Prerequisite(s): MGT 403 or equivalent. An introduction to the application of the scientific method and the solution of management decision problems. Serves the art of modeling (problem formulation) and the use of quantitative methods and computer software to solve quantified problems. Topics include linear programming, networks, and decision analysis.

MGT 210. Production and Operations Management. (4)
Lecture, three hours; outside projects and reading, three hours. Prerequisite(s): MGT 206 and MGT 201/STAT 232. Examines the design, operation, and control of production systems using modern analytical techniques. Compares production technologies from the U.S., Japan, and other countries. Topics include product design and process selection, capacity and location planning, facility layout, scheduling, project management, inventory and quality control. Computers and case studies are emphasized.

Lecture, three hours; individual study, three hours. Prerequisite(s): graduate standing. Provides a managerial perspective on the relationship between business and its external stakeholders. Primary focus is on the impact of public policy on business and the management of public issues in a global environment. Case studies and teamwork are emphasized.

MGT 209. Marketing Management. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): MGT 403 or equivalent. Examines the marketing process, the environment within which it operates, institutions involved, and the functions performed. Examines the relationships and trends in a market-based economic system. Develops concepts and terms applied to marketing decisions from the perspective of a manager.

MGT 211. Financial Accounting. (4)
Lecture, three hours; outside projects and reading, three hours. Prerequisite(s): MGT 201/STAT 232, MGT 205, MGT 206, MGT 208, MGT 211 (MGT 203 and MGT 205 may be taken concurrently). A team-taught, integrative case course that focuses on managing the firm’s human resources within the context of regulatory and economic conditions and changing workforce demographics. Topics include recruitment and selection, compensation and reward systems, employee development and appraisal, and information systems for meeting HRM objectives.

MGT 212. Management Synthesis. (4)
Lecture, three hours; outside projects and extra reading, three hours. Prerequisite(s): MGT 200, MGT 202, MGT 203, MGT 205, MGT 206, MGT 208, MGT 211, MGT 210, MGT 209. A course designed to bring all the students’ knowledge of the functional areas together to focus on making management decisions. Analyzes the design, operation, and control of production systems using modern analytical techniques. Compares production technologies from the U.S., Japan, and other countries. Topics include product design and process selection, capacity and location planning, facility layout, scheduling, project management, inventory and quality control. Computers and case studies are emphasized.

MGT 215. International Comparative Management. (4)
Lecture, three hours; outside projects and readings, three hours. Prerequisite(s): graduate standing. Provides a managerial perspective on the relationship between business and its external stakeholders. Primary focus is on the impact of public policy on business and the management of public issues in a global environment. Case studies and teamwork are emphasized.

MGT 216. Managing a Diverse Work Force. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): MGT 200 or consent of instructor. Examines human behavior in organizations and its implications for management decisions and actions. Explores the theory and practice of working with and managing people. Topics include motivation, learning, group dynamics, leadership, communication, organizational structure and culture.

Electives are selected with the assistance of a faculty advisor to meet individual educational and career goals. Electives are offered in areas such as accounting, entrepreneurial management, finance, human resources management, management science, management information systems, marketing, and production and operations management. The program is flexible to meet individual student interests, and students are also encouraged to take courses in related disciplines on the campus such as economics, statistics, computer science, and sociology.

The normative time to the MBA degree is eight quarters.

Master of Business Administration

Candidates for the Master of Business Administration (MBA) are required to complete all the general requirements specified in the Graduate Studies section of this catalog. The program conforms to Plan I or Plan II.

Plan I (Thesis)

For thesis work, a maximum of 8 units of credit will be granted. The thesis is a two or more quarter research endeavor to be initiated during a student's final year in the program. It is expected that most students develop theses related to advanced work in their electives. The format and other details of the thesis should meet the requirements of the Graduate Division of UCR.

Plan II (Comprehensive Examination)

Students who elect Plan II must complete a group case analysis as part of the capstone strategy course. This case serves in lieu of a comprehensive final examination. Students who submit a "not acceptable" case are given one additional quarter to revise the case analysis to an "acceptable" level.

Admission to the graduate program is based on several criteria including the quality of previous academic work, scores on the Graduate Management Admission Test (GMAT), letters of recommendation, and managerial experience.
patterns and career development, stereotyping, communication style, work-family conflicts, reasonable accommodation and other legislative requirements.

MGT 217. Management-Labor Relations. (4)
Lecture, three hours. Prerequisite(s): MGT 210 or equivalent and consent of instructor. The social forces leading to collective employee action in public and private institutions are examined in light of labor legislation, labor law, labor economics, collective bargaining, and the aspirations of social groups.

MGT 218. Ethics in Management. (4)
Lecture, three hours. Examines ethical dilemmas faced by managers and organizations and extends decision analysis to include the ethical dimension present in most policy decisions. Seeks to increase the students’ ability to identify and respond to ethical issues in organizations, including such areas as affirmative action, bribery, delinquency, working conditions, product safety, environmental impact, and international relations.

MGT 219. Legal Framework of Decisions. (4)
Lecture, three hours. Examines the legal environment within which legislative bodies, courts and administrative agencies act upon the operation of business and government. Contracts, judicial and legislative process and administrative rule making reviewed. Special attention devoted to effects of California Environmental Quality Act and National Labor Relations Act upon public and private decisions.

MGT 221. Decision Making Under Uncertainty. (4)
Lecture, three hours; outside projects and extra reading, three hours. Prerequisite(s): MGT 206 or consent of instructor. Introduces basic tools for using data to make informed managerial decisions under uncertainty. Deals with modeling, performance evaluation, and optimization of systems with uncertain parameters. Topics include Markov chains, Markov decision processes, and probabilistic linear and dynamic programming. Applications are drawn from operations, finance, marketing, and other management fields.

MGT 222. Organization Development and Change. (4)
Lecture, three hours; outside projects and extra reading, three hours. Prerequisite(s): MGT 200 or consent of instructor. Stresses the initiation and management of organizational change through the use of applied behavioral science knowledge. Emphasizes the diagnosis of organizational problems followed by the development of an improved plan and the strategies and tactics for implementing that plan.

MGT 223. Power, Control, and Rewards in the Firm. (4)
Lecture, three hours; extra readings and paper, three hours. Prerequisite(s): MGT 210 or consent of instructor. Explores the relationships between shareholders, management, and the board of directors and their effects on the direction of the corporation. Examines how executive compensation affects performance. Topics include the separation of ownership from control, board monitoring, the components of executive compensation, and the division of rewards in partnerships and new ventures.

MGT 224. Managing for Quality Improvement. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): MGT 201/STAT 232 or consent of instructor. Discusses the operational aspects of quality improvement in manufacturing and service organizations. A major part of the course is dedicated to the broader issues of Total Quality Management, Statistical Process Control, and the difficulties in implementing quality efforts in organizations.

MGT 225. Health Care Management. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): MGT 200 or consent of instructor. Provides an overview of health care management issues. Topics include the structure of the U.S. health care system, with emphasis on public and private mechanisms for financing health care, and alternative ways of organizing the provision of medical care. Also focuses on aspects of organizational behavior and human resource management relevant for organizations where ambiguity of authority may exist, that is, where professionals work in an organizational setting.

MGT 227. Financial Institutions and Markets. (4)
Lecture, three hours; outside projects and readings, three hours. Prerequisite(s): MGT 201/STAT 232. Characteristics of financial assets, financial markets, and financial institutions are discussed. The simple relationships between these financial entities and basic macroeconomic variables such as wealth, income, and interest rates are covered. The demand and supply of money, loanable funds, the determinations of real rates of interest, and the term structure of interest rates are studied.

MGT 228. Consumer Behavior. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): MGT 209 or consent of instructor. Analyzes why people buy and examines purchase decision processes and outcomes. Studies current models of consumer behavior. Topics include brand equity, customer delight, global marketing, behavior modification, and strategic market analysis.

MGT 229. Management Control Systems. (4)
Lecture, three hours; outside projects and readings, three hours. Prerequisite(s): MGT 204 or equivalent. Discusses the role of accounting information in the design and implementation of management control systems. Responsibility accounting and performance evaluation will be emphasized. Complex issues related to management control systems will be discussed through cases.

MGT 230. Data-Base for Management. (4)
Lecture, three hours; outside projects and readings, three hours. Prerequisite(s): MGT 205. Examines the features and capabilities of data-base management systems, including data-base classification, data structures, file organization, evaluation, and management of data-base systems.

MGT 231. Corporate Finance and Investment. (4)
Lecture, three hours; outside problem sets and extra reading, three hours. Prerequisite(s): MGT 202. Examines the fundamentals of financial management on an international scale. Topics covered include international financial markets (currency exchange, exchange risk, hedging foreign exchange risk, the international capital asset pricing model, and trade financing.

MGT 232. Corporate Taxation. (4)
Lecture, three hours; extra readings and paper, three hours. Prerequisite(s): MGT 202. The fundamentals of financial management on an international scale are examined. Topics covered include tax planning and tax management and the tax implications of organizational structure.

MGT 233. Accounting Systems and Control. (4)
Lecture, three hours; outside projects and readings, three hours. Prerequisite(s): MGT 204 or equivalent. Study of the design and implementation of accounting systems including those for sales, receivables, purchases, payables, cash receipts and disbursements, payroll, pro-

MGT 234. Case Studies in Marketing Management. (4)
Lecture, three hours; outside research, four hours. Prerequisite(s): MGT 209 or consent of instructor. A decision-oriented course with special emphasis on strategic planning and control involving pricing, product positioning, promotion, and distribution. Case studies are used to illustrate applications.

MGT 235. Business Policy and Strategy. (4)
Lecture, three hours; outside projects and readings, three hours. Prerequisite(s): MGT 212. Studies the formulation, implementation, and evaluation of business unit and corporate strategies and the organizational policies and managerial practices that support them. Theory is applied to actual general management problems using cases, group exercises, and other simulations of strategic challenges.

MGT 236. Decision Making Under Uncertainty. (4)
Lecture, three hours; outside projects and extra reading, three hours. Prerequisite(s): MGT 206 or consent of instructor. Introduces basic tools for using data to make informed managerial decisions under uncertainty. Covers modeling and solution methods in network optimization, integer and nonlinear programming, and multiple criteria decision analysis. Examines applications and case studies in operations, logistics, finance, and marketing.

MGT 237. Multinational Financial Management. (4)
Lecture, three hours; outside projects and readings, three hours. Prerequisite(s): MGT 202. The fundamentals of financial management on an international scale are examined. Topics covered include international financial markets (past, current, and proposed), balance of payments, foreign exchange markets (spot, forward, futures, options), the Eurocurrency market, measurement of foreign exchange risk, hedging foreign exchange risk, the international capital asset pricing model, and trade financing.

MGT 238. Simulation for Business. (4)
Lecture, three hours; outside projects and extra reading, three hours. Prerequisite(s): MGT 201/STAT 232; MGT 205. Introduces computer simulation as a tool for analyzing complex decision problems. Analysis and discussion of the theory and practice of modeling through simulation. Topics include modeling uncertainty and collecting input data, basic simulation principles, Monte Carlo simulation techniques, model verification and validation, and analysis of simulation output. Examines applications in manufacturing, finance, health services, and public policy.

MGT 240A. Taxation (4)
Lecture, three hours; outside projects and extra reading, three hours. Prerequisite(s): MGT 211 or equivalent or consent of instructor. Covers federal income tax law as they apply to individuals, partnerships, and corporations. Also discusses tax planning, tax policy, and other special tax issues.

MGT 240B. Advanced Taxation. (4)
Lecture, three hours; outside case analysis, three hours. Prerequisite(s): MGT 240A or equivalent. Articulates advanced topics in federal taxation and tax planning. Explores many facets of the complex body of tax law including tax research, alternative minimum tax, investment losses, employee compensation, corporate distributions, and federal transfer taxes.

MGT 241. Accounting Systems and Control. (4)
Lecture, three hours; outside projects and readings, three hours. Prerequisite(s): MGT 204 or equivalent. Study of the design and implementation of accounting systems including those for sales, receivables, purchases, payables, cash receipts and disbursements, payroll, pro-
duction control, etc. Topics on auditing, internal accounting control, and related issues will be emphasized.

**MGT 242. Accounting Policy Making.** (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): MGT 211 or consent of instructor. Examines the accounting policy-making process from a management perspective. Topics include the formulation of accounting policy; the institutional framework of accounting, the development of accounting standards, and accounting policy alternatives for issues such as revenue recognition, valuation of assets and liabilities, intangibles, and foreign exchange accounting. Cases are heavily used for illustrating accounting problems.

**MGT 243. Product Development.** (4)

Lecture, three hours; outside projects and extra reading, three hours. Prerequisite(s): MGT 209 or consent of instructor. Develops a framework for the development of product concepts through new product introduction. Emphasis is given to tactical and strategic decisions in product positioning and policy. Relies on extensive computer-based analysis.

**MGT 244. Cases in Financial Management.** (4)

Lecture, three hours; written case analyses and reports, three hours. Prerequisite(s): MGT 202, MGT 211. Provides intensive exercise in valuation methods and the economic analysis of problems of corporate financial policy. Specific case topics include advanced capital budgeting, cost of capital estimation, corporate valuations, mergers and takeovers, transactions, recapitalizations, capital structure policy, security issuance and repurchase, risk management, and dividend policy. Case reports, both written and oral, are required.

**MGT 245. Financial Statement Analysis.** (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): MGT 211 or consent of instructor. Examines the role of financial statement analysis in an efficient capital market. Data from financial statements of major corporations is analyzed to develop skills necessary to interpret financial accounting information. Designed for future professionals who will be intensive users of financial accounting reports (e.g., security analysts, credit analysts).

**MGT 246. Entrepreneurial Management.** (4)

Lecture, three hours; outside projects, three hours. Prerequisite(s): MGT 202, MGT 209 or consent of instructor. Study of the entrepreneurial process, its challenges, and the driving forces behind it—the managerial skills, mental attitudes, and basic knowledge necessary for creating and growing a new venture. Topics include opportunity assessment, building the management team, marshalling capital and other critical resources; and harvest strategies.

**MGT 247. Advertising Management.** (4)

Lecture, three hours. Prerequisite(s): MGT 228 or consent of instructor. Examines the role and use of advertising within the marketing function. The models and research methods appropriate to the field will be explored with special attention given to objective setting, copy decisions, media decisions and budgeting. Social/economic issues are also examined.

**MGT 248. Global Marketing.** (4)

Lecture, three hours; outside research, two hours; extra reading, one hour. Prerequisite(s): MGT 209 or consent of instructor. Analyses global markets and opportunities. Provides an understanding of global environments and the marketing management required to meet the demands of global markets in a dynamic setting.

**MGT 249. Pricing Strategy.** (4)

Lecture, three hours; consultation or discussion, one hour. Prerequisite(s): MGT 209 or consent of instructor. The concepts of competitive pricing, price leadership, price discrimination, price warfare, and the strategic implication of skimming versus penetration strategies with respect to the experience curve will be developed.

**MGT 250. Global Markets.** (4)

Lecture, three hours; outside research. Prerequisite(s): MGT 202. Addresses the world economy, mode of entry into markets, and the role of political risk, global strategic alliances, and competing in global markets. Includes the Markowitz model. Addresses pricing in the capital markets with an emphasis on the Capital Asset Pricing Model and the Arbitrage Pricing Theory. Covers empirical issues in testing these models. Other topics addressed include risk-adjusted portfolio performance, term structure of interest rates, bond pricing, and bond portfolio management.

**MGT 250B. Speculative Markets.** (4)

Seminar, three hours; outside research, three hours. Prerequisite(s): MGT 202; MGT 201; MGT 202; MGT 250A or consent of instructor. Covers various topics in derivatives markets. Introduces pricing techniques for forwards, futures, options, swaps, and other derivatives. Addresses risk management and investment strategies with derivatives.

**MGT 257. Marketing Strategy.** (4)

Seminar, three hours; consultation, one hour. Prerequisite(s): MGT 209 or consent of instructor. A framework is developed for strategic marketing planning. Topics emphasized include market audits and futures research, product-market identification, product portfolio balancing, target market strategy, and integrated marketing program planning. Relies heavily on an extensive computer-based market simulation.

**MGT 259. Operations Planning and Control.** (4)

Seminar, three hours; outside projects and extra reading, three hours. Prerequisite(s): MGT 207. A study of the design of systems used for controlling assets, planning, and scheduling in manufacturing and service operations. Includes analysis of operating systems and discussion of planning and scheduling methods, heuristics, and interfaces with MRP and JIT inventory systems. Emphasizes the importance of integration, flexibility, and automation of the operation system.

**MGT 260. Contemporary Issues in Management.** (4)

Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. A seminar focusing on selected topics in contemporary management practices. Topics will include key concepts in leadership, motivation, management of change, societal issues, community relations, and organizational development. The course will rely heavily on the perspectives of invited business professionals.

**MGT 264. Information Systems Resources Management.** (4)

Seminar, three hours; outside research, two hours; extra reading, one hour. Prerequisite(s): MGT 205 or consent of instructor. Provides an understanding of the issues, strategies, and tactics involved in managing information systems in large organizations. Topics include cost allocation, capacity planning, congestion problems, and distributed information systems. Relies heavily on case studies.

**MGT 265. Decision Support and Expert Systems.** (4)

Seminar, three hours; outside projects and extra reading, three hours. Prerequisite(s): MGT 203, MGT 206; or consent of instructor. Covers advanced topics in management support systems, including problem theory, decision support, and expert systems. Examines key issues involved in using information systems for decision making. Explores how information systems are used to solve management problems.

**MGT 266. Project Management.** (4)

Seminar, three hours; extra reading and project, three hours. Prerequisite(s): MGT 206 or equivalent. Deals with issues of project planning and control. Topics include differences between projects and production systems, project selection, project teams, breakdown structures of organization and work, scheduling and budgeting, resources management, project control and evaluation, and current project management software.

**MGT 267. Applied Business Forecasting.** (4)

Seminar, three hours; outside project, three hours. Prerequisite(s): MGT 201/STAT 232 or equivalent. Provides experience in developing forecasting models and applying them to problems in marketing, production, inventory management, business economics, and other fields. Discusses issues in data acquisition, data analysis, modeling of relations between variables, trend analysis, and seasonal forecasting. Uses case studies and applications from a variety of management areas.

**MGT 268. Funding the Entrepreneurial Venture.** (4)

Seminar, three hours; case studies, two hours; extra reading, one hour. Prerequisite(s): MGT 246 or consent of instructor. Provides a working knowledge of the many financing vehicles and techniques employed in financing new and emerging ventures. Topics include identifying opportunities; deal structure; sources of debt and equity financing; valuation techniques; late-stage financing strategies; and the harvest.

**MGT 269. The New Venture and the Business Plan.** (4)

Seminar, three hours; outside research, two hours; case study preparation, one hour. Prerequisite(s): MGT 246 or consent of instructor. Focuses on the entrepreneurial process from conception to birth of a new venture. Explores the process of developing an opportunity assessment, structuring and rewarding the founding management team, and marshalling necessary critical resources through the development of a full-scale business plan.

**MGT 270. Doctoral Seminar in Corporate Finance.** (4)

Seminar, three hours; outside research, three hours. Prerequisite(s): MGT 244 or consent of instructor. Provides an introduction to the theory of finance as applied to corporate issues. Topics include the Modigliani and Miller theorems concerning optimal capital structure and dividend policy and the Miller theory of capital structure equilibrium.

**MGT 271. Doctoral Seminar in Portfolio Theory and Investments.** (4)

Seminar, three hours; research, three hours. Prerequisite(s): consent of department. Current research in portfolio theory (including the use of options and futures markets), capital budgeting, and applied econometric methods of testing the theories studied.

**MGT 272. Global Strategy and Management.** (4)

Seminar, three hours; outside projects, three hours. Prerequisite(s): MGT 200, MGT 202, MGT 209; or consent of instructor. Provides an overview of the strategic issues that multinational firms and managers encounter in a global marketplace. Topics include the globalization of the world economy, mode of entry into markets, analysis of political risk, global strategic alliances, and competing in emerging economies.
MGT 273. International Accounting (4)
Seminar; three hours; extra reading and term paper, three hours. Prerequisite(s): MGT 201 or equivalent. Examines the context and issues of comparative international accounting and financial reporting practices. Provides a working understanding of international accounting practices. For international business, investments, and capital market interests.

MGT 274. Advanced Topics in Finance (4)
Seminar; three hours; outside research, three hours. Prerequisite(s): MGT 202. Explores the latest developments in theoretical or empirical finance. Topics covered may include asset pricing, performance evaluation, derivative securities, market microstructure, corporate finance, and corporate control and governance.

MGT 275. International Banking (4)
Seminar; three hours; research, three hours. Prerequisite(s): MGT 202, MGT 277. Discusses the motives behind the multinationalization of commercial banking activities, the international banking markets, international banking services—swaps, underwriting, foreign exchange, management, immunization techniques, etc., and the set of risks unique to international operations.

MGT 277. Advanced Financial Accounting (4)
Seminar; three hours; outside research, three hours. Prerequisite(s): BSA 165C or equivalent (may be taken concurrently). Covers advanced financial accounting and reporting practices. Emphasizes topics such as consolidated financial statements, branch accounting, foreign transactions, segment reporting, partnership accounting, and accounting for nonprofit organizations.

MGT 278. Auditing and Assurance Services: Theory and Practice (4)
Seminar; three hours; outside research, three hours. Prerequisite(s): BSA 165B or equivalent. An in-depth examination of audit processes and procedures. Develops audit judgment skills through the identification and resolution of issues associated with the auditing practice.

MGT 280. Business Issues in Electronic Commerce (4)
Seminar; three hours; outside project, three hours. Prerequisite(s): MGT 205 or consent of instructor. Provides an understanding of the various business strategies, management issues, and pertinent technologies related to electronic commerce. Explores several of the problems surrounding electronic commerce including security issues, privacy, encryption, safeguarding of intellectual property rights, acceptable use policies, and legal issues.

MGT 281. Systems Analysis and Design (4)
Seminar; three hours; outside project, three hours. Prerequisite(s): MGT 205, MGT 230; or consent of instructor. Provides an understanding of the systems development life cycle with emphasis on the analysis and design phases. Familiarizes students with the tools and processes used by system developers to analyze, design, and construct computer-based systems. Provides experience in analyzing and designing a computer-based system.

MGT 282. Business Data Communications (4)
Seminar; three hours; outside project, three hours. Prerequisite(s): MGT 205. Provides insight into the role of telecommunications in business, with an emphasis on information management. Specific topics include data communications (hardware components, interfaces, and link protocols), architecture and technology (protocols, local area networks, and emerging digital services), and network management (control and security).

MGT 285 (E-Z). Special Topics in Management (4)
Seminar; three hours per week or thirty hours per quarter; assignment of the remaining hours varies from segment to segment. Prerequisite(s): graduate standing and consent of instructor. Additional prerequisites are required for some segments of this course; see the School. Topics not contained in a regular course. Topics are announced at the time of offering.

MGT 290. Directed Studies (1-6)
Prerequisite(s): consent of instructor. Directed studies and research in selected problems or theories of management for advanced graduate students to pursue special areas of interest. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MGT 297. Directed Research (1-6)
Prerequisite(s): consent of instructor. Directed research in selected problems of management for graduate students with special research interests. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MGT 298-F. Fieldwork in Management (1-4)
Field, three hours per unit; consultation, one hour. Prerequisite(s): consent of instructor. Supervised field experience culminating in a final report or other academic component. May be repeated for up to 8 units of credit toward the degree.

MGT 299. Research for Thesis or Dissertation (1-12)
Prerequisite(s): consent of instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PROFESSIONAL COURSES

MGT 302. Apprentice Teaching (1-4)
Seminar, one to four hours. Prerequisite(s): limited to departmental teaching assistants; graduate standing. Supervised individual instruction in teaching including monitoring of teaching assistant’s activities and regular consultation with assistant concerning teaching responsibilities. Graded Satisfactory (S) or No Credit (NC). May be repeated; not for degree credit.

MGT 402. Review of Quantitative Methods for Management (4)
Lecture, three hours; laboratory, one hour; individual study, two hours. Prerequisite(s): graduate standing. Reviews quantitative concepts and techniques related to the various functional areas of management. Topics include properties of functions, systems of equations and matrices (linear algebra), differentiation and integration (calculus), and basic probability concepts. Not for degree credit. Satisfactory (S) or No Credit (NC) grading is not available.

MGT 404. Management Communication Workshop (2)
Lecture, one hour; workshop, three hours. Prerequisite(s): graduate standing. Teaches students to communicate effectively as managers through examination and practice of communication concepts, techniques, and skills. Topics include business writing, interpersonal skills, oral presentations, meeting leadership, and working in multicultural teams. Not for degree credit. Satisfactory (S) or No Credit (NC) grading is not available.

MARXIST STUDIES MINOR

Stephen E. Cullenberg, Ph.D., Chair
111 Highlander Hall, Building B
(909) 787-5037, x1573

Committee in Charge
Edna Bonacich, Ph.D. (Ethnic Studies and Sociology)
Stephen E. Cullenberg, Ph.D. (Economics)
Carole Fabricant, Ph.D. (English)
Michael Kearney, Ph.D. (Anthropology)
Victor D. Lipitz, Ph.D. (Economics)
Bernd Magnus, Ph.D. (Philosophy)
Irwin M. Wall, Ph.D. (History and Religious Studies)
Patricia O’Brien, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The Marxist Studies minor integrates courses from various disciplines in order to examine the theory and main applications of Marxism in the social sciences and humanities disciplines.

Requirements for the minor (28 units)
1. Theory, method, and history of thought requirement
   a) ECON 115
   b) PHIL 185

2. Four courses from the following dealing with applications of Marxist studies in various fields:
   a) ANTH 131
   b) ECON 175
   c) POSC 160A
   d) POSC 160B
   e) WRIT 170/ETST 170
   f) WRIT 180X

A minor is a set of courses focused on a single discipline or an interdisciplinary thematic area. There can be no substitution for the courses listed as constituting a minor without approval of the governing department or committee. There is no limit on the number of minors a student can declare. Students must declare the minor(s) before their final degree check before graduation, by completing a petition with the College of Humanities, Arts, and Social Sciences Student Affairs Office, the College of Natural and Agricultural Sciences Student Affairs Office, or the College of Engineering Student Affairs Office depending on their major. Prior approval by the department or committee offering the minor is required. The minor is noted on the transcript at the time the degree is conferred.
The Department of Mathematics offers a B.A. and a B.S. degree in programs which share a common, solid mathematical foundation but which differ in their specializations in the pure and applied areas of mathematics. These programs can provide the basis for careers in mathematics itself or within the many scientific and business fields which, in today's technological society, are dependent upon a basic knowledge of mathematical methods.

The B.A. in Mathematics, following the liberal arts tradition, combines a broad coverage of the humanities and social sciences with a moderate amount of advanced mathematics in the major. It is selected most often either by students who intend to obtain a teaching credential with a specialty in mathematics or by students who wish to pursue graduate work in business or the social sciences.

The B.S. degree in Mathematics is more technical and contains a greater concentration of work in the major field. The Pure Mathematics program is directed toward those students who may wish to continue on to graduate work in mathematics. The Applied Mathematics programs, with options in Biology, Chemistry, Environmental Sciences, Physics, Statistics, and Economics, are designed to provide a rigorous training in mathematics together with a substantial background in the discipline of the option. The Computational Mathematics program is designed to prepare the student for professional work with computers and computer systems as well as for graduate work in computer science.

Academic Advising
Each Mathematics major is assigned a departmental advisor who assists the student in formulating educational goals and who monitors the student's subsequent progress in an academic program. Each quarter a study list must be approved by this advisor.

Teaching
In order to teach mathematics in the California public schools, students must have completed a baccalaureate program and a graduate credential program. Prior to admission to a credential program, candidates must have demonstrated proficiency in the field in which they will teach. Proficiency can be demonstrated by passing state examinations. For additional information about the preparation required for a teaching credential, please refer to the Graduate School of Education section of the catalog.

Degree Requirements

University Requirements
See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Natural and Agricultural Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements
To fulfill the Natural Sciences requirement, the Department of Mathematics requires the following:

1. One of the year sequences
   a) BIOL 002, BIOL 003, BIOL 005C
   b) CHEM 001A-CHEM 001B-CHEM 001C
   c) PHYS 002A, PHYS 002B, PHYS 002C or PHYS 040A, PHYS 040B, PHYS 040C

2. Either one course in the physical sciences if (a) above is completed or one course in the biological sciences if (b) or (c) above is completed

The major requirements for the B.A. and B.S. degrees in Mathematics are as follows:

For the Bachelor of Arts
1. Lower-division requirements: MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B, MATH 046
2. Four (4) units of either one course in Computer Science or one upper-division course in Statistics.
3. Thirty-six (36) units of upper-division mathematics, excluding courses in the MATH 190-199 series.

For the Bachelor of Science
Lower-division requirements for all programs are MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B, MATH 046, CS 010 (CS 012 is recommended).

1. Pure Mathematics program (56 units)
   a) Thirty-six (36) units of upper-division mathematics to include at least 24 units from MATH 131, MATH 132, MATH 145A-MATH 145B, MATH 151A-MATH 151B-MATH 151C, MATH 171, MATH 172
   b) At least three from (a) above must be from MATH 145A-MATH 145B, MATH 151A-MATH 151B-MATH 151C
   c) Courses in the MATH 190-199 series are excluded
   d) Twenty (20) additional units of upper-division mathematics, upper-division computer science, or other related courses approved by the Undergraduate Advisor (for students who wish to pur-
2. Applied Mathematics programs

MATH 113 or MATH 131, MATH 132, MATH 146A-MATH 146B-MATH 146C and the courses in one of the following options:

a) Biology option
   (1) BIOL 005A, BIOL 005B, BIOL 005C
   (2) MATH 149A
   (3) Three courses from MATH 120, MATH 121, MATH 135A-MATH 135B, MATH 149B-MATH 149C
   (4) BIOL 102, BIOL 105, BIOL 108, BIOL 117
   (5) Four (4) additional units of upper-division biology

b) Chemistry option
   (1) CHEM 001A-CHEM 001B-CHEM 001C
   (2) Either PHYS 040A, PHYS 040B, PHYS 040C (preferred); or PHYS 002A, PHYS 002B, PHYS 002C
   (3) Four courses from MATH 120, MATH 121, MATH 135A-MATH 135B, MATH 149B-MATH 149C
   (4) CHEM 110A-CHEM 110B, CHEM 111, CHEM 113
   (5) Four (4) additional units of upper-division chemistry

c) Economics option
   (1) MATH 120, MATH 121, MATH 149A-MATH 149B-MATH 149C
   (2) Twenty (20) units of upper-division economics, including ECON 102A, ECON 107, ECON 108, ECON 110

2. Upper-division requirements: Twenty-four (24) units of upper-division mathematics

3. Computational Mathematics program

a) MATH 112, MATH 113 or MATH 131, MATH 120, MATH 121, MATH 135A-MATH 135B
b) Either MATH 120 or MATH 171
c) Twenty-four (24) units of technical electives to be chosen from
   (1) MATH 121, MATH 125A-MATH 125B, MATH 146A-MATH 146B-MATH 146C, MATH 149A-MATH 149B-MATH 149C, MATH 171
   (2) CS 130, CS 166, CS 170, CS 177

Mathematics Honors Program

Candidates for the Honors Program in Mathematics must
1. Complete 9 units of upper-division mathematics in addition to the requirements of the major
2. Complete MATH 145B, MATH 151A-MATH 151B-MATH 151C, and MATH 171 with a grade of "B" or better in each course and have an overall grade point average of at least 3.50 in mathematics
3. Complete one of the following:
   a) A paper based on an approved plan of independent study

b) Three one-quarter graduate courses in mathematics with a grade of "B" or better.

It is the responsibility of the honors candidates to notify the department of their eligibility.

Minor

The following are the requirements for a minor in Mathematics.
1. Lower-division requirements (20 units):
   MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B
2. Upper-division requirements: Twenty-four (24) units of upper-division mathematics courses

Students with a minor in Mathematics should consult with a faculty advisor in Mathematics to construct a specific program consistent with their goals.

See [Minors under the College of Natural and Agricultural Sciences in the Undergraduate Studies section of this catalog for additional information on minors.]

Education Abroad Program

The Mathematics Department encourages eligible students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while earning courses which earn units toward graduation. Because strategy in choosing courses to be taken here and courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult the departmental Student Affairs Officer for assistance. For further details see Education Abroad Program under International Services Center in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

GRADUATE PROGRAMS

Domestic applicants to these graduate programs must supply Graduate Record Examination scores for the General Test (verbal, quantitative, and analytical).

M.A. or M.S. in Mathematics

General University requirements are listed in the Graduate Studies section of this catalog. Specific requirements of the Department are as follows:
1. Completion of two of the following sequences, MATH 201A-MATH 201B-MATH 201C, MATH 205A-MATH 205B-MATH 205C, MATH 209A-MATH 209B-MATH 209C, and MATH 210A-MATH 210B, with a grade of "C" or better in each sequence.
course and a G.P.A. of 3.00 in each chosen sequence;

2. As a substitute for one or more course sequences in (1), passing a Ph.D. qualifying examination fulfills the course requirement of the corresponding sequence;

3. Taking 36 units of approved courses, of which at least 18 must be in the 200 series courses in mathematics;

4. Completion of the courses MATH 131, MATH 132, MATH 151A, and MATH 151B, or their equivalents.

M.S. in Mathematics (Applied)

General University requirements are listed in the Graduate Studies section of this catalog.

Specific requirements of the Department are as follows:

1. Passing written qualifying examinations at the master's level (or higher) in two of the following fields: Advanced Ordinary Differential Equations, Partial Differential Equations, Advanced Statistical Inference, Calculus of Variations, Combinatorial Theory, Real Analysis, and Advanced Numerical Analysis;

2. 36 units of approved courses, of which 18 must be in the 200 series;

3. Completion of the courses MATH 131, MATH 132, MATH 151A-MATH 151B, MATH 146A, MATH 149A, or their equivalent. Also, MATH 165A is recommended, but not required.

Doctoral Degree in Mathematics

Specific requirements of the Department are as follows:

1. Passing the introductory courses in algebra (MATH 201A-MATH 201B-MATH 201C), complex analysis (MATH 210A-MATH 210B), real analysis (MATH 209A-MATH 209B-MATH 209C), and topology/differentiable manifolds (MATH 205A-MATH 205B-MATH 205C);

2. Passing at least three of the four qualifying examinations in algebra, complex analysis, real analysis and topology/differentiable manifolds with a grade of "A." The fourth of the above qualifying examinations must be passed with a grade of "B" or better; a student is allowed to take the qualifying examination at most twice in each area;

3. Completing four quarter-courses in mathematics numbered between 211 and 259. The normative time to the Ph.D. is 15 quarters.

LOWER-DIVISION COURSES

Mathematics placement examinations are scheduled each year before the fall quarter begins. They are mandatory for entering freshmen and recommended for advanced standing students who wish to enroll in MATH 003, MATH 005, MATH 009A, MATH 014, MATH 015, MATH 022, or MATH 023.

To qualify for MATH 009A, MATH 022, and MATH 023, a student must score at least 36 (60%) on the Precalculus Examination. To qualify for MATH 005, MATH 014, and MATH 015, a student must score at least 18 (30%) on the Precalculus Examination or at least 27 (60%) on the Mathematical Analysis Examination.

MATH 003. Basic Algebra. (0)

Lecture, two hours; laboratory, four hours. Prerequisite(s): none. Basic algebra, linear functions and equations, quadratic functions and equations, operations with functions. This course is not intended to meet any mathematics or physical science requirement and is intended for students who plan to take MATH 005 but are not prepared to take that course. Carries workload equivalent to four units but does not count towards graduation units.

MATH 005. Introduction to College Mathematics. (5)

Lecture, four hours; discussion, one hour. Prerequisite(s): MATH 003 with a grade of "C" or better or equivalent, or a sufficiently high placement test score on the Mathematical Analysis Examination, as determined by the Mathematics Department. A study of inequalities, absolute value, functions, graphing, logarithms, trigonometry, roots of polynomials, and other elementary concepts of mathematics.

MATH 009A-MATH 009B-MATH 009C. First-Year Calculus. (4-4-4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 009A: MATH 005 with a grade of "C" or better or equivalent; MATH 009B: MATH 009A or MATH 019A with a grade of "C" or better; MATH 009C: MATH 009B or MATH 019B with a grade of "C" or better. MATH 009A: Introduction to the differential calculus of functions of one variable; MATH 009B: Introduction to the integral calculus of functions of one variable; MATH 009C: Further topics from integral calculus, improper integrals, infinite series, Taylor's series, and Taylor's theorem.

MATH 010A-MATH 010B. Calculus of Several Variables. (4-4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010A: MATH 009B; for MATH 010B: MATH 009C and MATH 010A. MATH 010A: Euclidean geometry, matrices and linear functions, determinants, partial derivatives, directional derivatives, Jacobians, gradients, chain rule, Taylor's theorem for several variables. MATH 010B: Vector, differential calculus continued, implicit differentiation, extreme values, multiple integration, line integrals, vector field theory, theorems of Gauss, Green and Stokes.

MATH 014. Mathematics, A Humanistic Approach. (4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 003 or equivalent. Intended to fulfill the breadth requirement for students outside the natural and agricultural sciences. A survey of numerical and logical methods illustrating the role of mathematics in the development of civilization. Topics will include integral, rational, and irrational numbers; number systems; infinity; the concept of proof; as well as a glimpse of calculus. Only one of MATH 014 or MATH 015 may be taken for credit.

MATH 015. Liberal Arts Mathematics. (4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 003 or equivalent. Designed to fulfill the breadth requirement for students outside the natural and agricultural sciences. Illustrates the interaction of mathematics with other subject areas through the study of selected topics of contemporary mathematics. Topics are chosen from discrete mathematics, counting and probability, and the interaction between algebra and geometry.

MATH 022. Calculus for Business. (5)

Lecture, three hours; discussion, two hours. Prerequisite(s): MATH 005 or equivalent. Relations and functions (linear, polynomial, logarithmic, and exponential); differential calculus of functions of one and two variables, and integration (indefinite and definite) with applications to business and economic problems. Credit will not be given for MATH 022 if it has already been given for MATH 009A or MATH 009B.

MATH 023. Applied Matrix Algebra. (4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 005 or equivalent. Matrix operations, linear dependence and independence, ranks and inverses, systems of linear equations, determinants, eigenvalues, and eigenvectors with business and economic applications. This course is designed for students who are not mathematics majors and does not count toward fulfillment of the mathematics major requirement.

MATH 046. Introduction to Ordinary Differential Equations. (4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 005 or equivalent. First order equations, linear second order equations, series solutions. Laplace transforms, applications to the physical and biological sciences.

UPPER-DIVISION COURSES

MATH 112. Finite Mathematics. (4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 009A, CS 010. Introduction to the basic concepts of finite and structural mathematics with emphasis on applications to computer science. Topics include axiomatic systems; combinatorics, propositional and predicate calculus; graph theory trees, state diagrams, networks, induction, elementary enumeration, and recurrence relations.

MATH 113. Applied Linear Algebra. (5)

Lecture, three hours; discussion, two hours. Prerequisite(s): MATH 010A. Matrices and systems of linear equations, determinants, Gaussian elimination and pivoting, vec-
tor spaces, linear independence and linear transformation, orthogonality, eigenvalues and eigenvectors. Selected topics and applications. Numerical linear algebra and extensive computer use are integrated with these topics. Credit is awarded for only one of MATH 113 or MATH 131.

MATH 120. Optimization. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010A or MATH 113 or MATH 131 (may be taken concurrently). Introduction to classical optimization, including unconstrained and constrained problems in several variables, Jacobi and Lagrangian methods, and the Kuhn-Tucker conditions. Covers the basic concepts of linear programming, including the simplex method and duality with applications to other subjects.

MATH 121. Game Theory. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010A. Games in extensive, normal, and characteristic form as models of conflict and/or cooperation. Two-person zero-sum games, minimax theorem, relation to linear programming. Non-zero-sum games, Nash equilibrium theorem, bargaining, the core, Shapley value. Economic market games.

MATH 125A-MATH 125B. Introduction to Combinatorics. (4-4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 090C. MATH 112. Elements of graph theory, Polya’s theory of counting, principle of inclusion-exclusion, Hall matching theorem, combinatorial designs.

MATH 131. Linear Algebra I. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010A. An introduction to vector spaces, matrices, and linear transformations. Only one of the MATH 113 or MATH 131 may be taken for credit.

MATH 132. Linear Algebra II. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 113 or MATH 131. Further topics in linear algebra including eigenvalues, Hermitian and unitary matrices, positive definite matrices, and canonical forms.

MATH 133. Geometry. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 113 or MATH 131. An introduction to projective planes, the line at infinity, finite geometries, Euclidean and non-Euclidean geometries, groups of transformations, and other algebraic structures related to geometry.

MATH 135A-MATH 135B. Numerical Analysis. (4-4) Lecture, three hours; discussion, one hour. Prerequisite(s): CS 010 or equivalent; MATH 113 or MATH 131 (may be taken concurrently). Numerical methods for the determination of solutions to nonlinear equations and simultaneous linear equations. Interpolation, numerical integration, and the numerical solution of ordinary differential equations. Techniques of error analysis. Computer applications.

MATH 136. Introduction to the Theory of Numbers. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 113 or MATH 131. Prime and composite integers, number theoretic functions, diophantine equations, congruences, quadratic reciprocity, additive arithmetic.

MATH 137A-MATH 137B. Plane Curves. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010B; MATH 132; for MATH 137B: MATH 137A. The complex projective plane, homogeneous polynomials, plane curves, intersection multiplicities and Bezout’s theorem; simple and singular points, tangents, duality, structure of cubic curves, birational transformations and resolution of singularities.

MATH 138A. Introduction to Differential Geometry. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 113 or MATH 131. Elementary theory of curves and surfaces. First and second fundamental forms.

MATH 138B. Introduction to Differential Geometry. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010B, MATH 138A. Gaussian curvature; geodesics; Gauss-Bonnet Theorem.

MATH 134. Introduction to Set Theory. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010A. Algebra of subsets of a set. Algebra of relations and functions. Cardinal and ordinal numbers and their arithmetic operations. The well-ordering theorem, transfinite induction, and Zorn’s lemma.

MATH 145A. Introduction to Topology. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 144. Elementary topology in metric spaces.

MATH 145B. Introduction to Topology. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 145A. Geometric topology, algebra associated with finite complexes and applications.

MATH 146A-MATH 146B-MATH 146C. Ordinary and Partial Differential Equations. (4-4-4) Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010A-MATH 010B, MATH 046. Theory of linear differential equations, orthogonal expansions, boundary value problems for ordinary and partial differential equations, separation of variables, transform methods.

MATH 149A-MATH 149B-MATH 149C. Probability and Mathematical Statistics. (4-4-4) Lecture, three hours; laboratory, one hour. Prerequisite(s): MATH 010A-MATH 010B, MATH 046 (may be taken concurrently). An introduction to the mathematical theory of probability and statistics. Discrete and continuous distributions, sampling distributions, tests of hypotheses, estimation, maximum likelihood techniques, regression and correlation. Students may not receive credit for more than one of the sequences MATH 149B-MATH 149C and STAT 160B-STAT 160C.
MATH 20A-MATH 20B-MATH 20C. Real Analysis. (4-4-4)

Lecture, three hours. Prerequisite(s): MATH 151C. Measure theory, integration, representation theorems. Complex measures, integration on product spaces, differentiation. Lebesgue spaces, Hilbert space, Banach space.

MATH 210A-MATH 210B. Complex Analysis. (4-4)

Lecture, three hours. Prerequisite(s): MATH 151C and MATH 165A. Complex functions, Cauchy’s theorem and consequences, Taylor and Laurent series, representation theorems for meromorphic and entire functions, residues, harmonic functions, analytic continuation, conformal mapping, and Riemann surfaces.

MATH 211A-MATH 211B. Ordinary Differential Equations. (4-4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 151C. Existence and uniqueness of solutions, linear differential equations, singularities of the first and second kinds, self-adjoint eigenvalue problems on a finite interval, singular self-adjoint boundary-value problems for second-order equations; method of averaging and numerical integration; autonomous systems. Method of Liapounov; stability for linear systems.

MATH 212. Partial Differential Equations. (4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 151C and MATH 165A. Classical theory of initial and boundary value problems for hyperbolic, parabolic and elliptic partial differential equations.

MATH 216A-MATH 216B. Combinatorial Theory. (4-4)

Lecture, three hours; discussion, one hour. Introduction to Combinatorial Optimization and Combinatorial Geometry including flows on networks, matroids, linear programming, lattices, exchange properties, Mobius function, Galois connection, coordinization.

MATH 217A-MATH 217B. Theory of Probability. (4-4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 151C. Existence and uniqueness of solutions, linear differential equations, singularities of the first and second kinds, self-adjoint eigenvalue problems on a finite interval, singular self-adjoint boundary-value problems for second-order equations; method of averaging and numerical integration; autonomous systems. Method of Liapounov; stability for linear systems.

MATH 220. Approximation Theory. (4)

Lecture, three hours; research, three hours. Prerequisite(s): MATH 209C. The study of the best approximation operator including the classical Chebyshev theory concerning approximations of continuous functions from a fixed finite-dimensional subspace (e.g. nth degree polynomials). Also a study of the minimal projection operator.

MATH 221. Several Complex Variables. (4)

Lecture, three hours; research, three hours. Prerequisite(s): MATH 151A-MATH 151B, MATH 165A-MATH 165B. Hartog’s theorems, domains of holomorphy, pseudoconvexity, Levi’s problem, coherent analytic sheaves, Cartan’s theorems A and B.

MATH 222. Algebraic Number Theory. (4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 201A. Algebraic number theory, including principal ideal domains, integral independence, algebraic number fields, classical ideal theory in Dedekind domains, classes of ideals, valuations, p-adic number.

MATH 223. Introduction to Homological Algebra. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): MATH 201C or consent of instructor. Theory of derived functors and its application to rings and associative algebras.

MATH 225A-MATH 225B. Commutative Algebra. (4-4)

Lecture, three hours; outside research, three hours. Prerequisite(s): MATH 201A-MATH 201B-MATH 201C. Basic theory of commutative rings, primary decomposition, integral dependence and valuation rings, intersection theorem of Krull, structure theorems for complete local rings, geometric local rings.

MATH 227A-MATH 227B. Lie Algebras. (4-4)

Lecture, three hours; outside research, three hours. Prerequisite(s): MATH 201A-MATH 201B. Basic definitions; solvable and nilpotent Lie algebras; structure and classification of semisimple Lie algebras; enveloping algebras and representation theory; representations of semisimple Lie algebras; generalization to Kac-Moody Lie algebras; and modular Lie algebras.

MATH 228. Functional Analysis. (4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 209A-MATH 209B-MATH 209C. Topological linear spaces; function spaces, linear operators; spectral theory; operational calculus; and further selected topics.

MATH 229A-MATH 229B. Stochastic Processes. (4-4)

Lecture, three hours; outside research, three hours. Prerequisite(s): MATH 217A-MATH 217B or consent of instructor. Sample path analysis of stochastic processes: separability and regularity properties. Topics from martingale and Markov processes, stochastic integration, semimartingales and stochastic differential equations. Each of these topics has an extensive theory, and so the courses are repeatable.

MATH 232A. Geometry I (Introduction to Manifolds). (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): MATH 131 and MATH 151C. Basic notions and examples; vector fields and flows; tensors and vector bundles; differential forms, integration and deRham’s theorem.

MATH 232B. Geometry II (Introduction to Differential). (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): MATH 232A. Local and global theory of curves. Surfaces in R3: the Gauss map, fundamental forms, curvature. Riemannian geometry: the Levi-Civita connection, curvature, geodesics, exponential map, completeness, Gauss-Bonnet theorem for surfaces.

MATH 241. Mathematical Physics Quantum Mechanics. (4)

Lecture, three hours; outside research, three hours. Prerequisite(s): MATH 209A-MATH 209B-MATH 209C; or consent of instructor. Foundations of quantum theory together with the relevant mathematics. Probabilistic interpretation of quantum mechanics, self-adjoint operators and physical observables, noncommutativity and the uncertainty principle. Spectral theory for (unbounded) self-adjoint operators. Stone’s theorem and other topics.

MATH 243A-MATH 243B. Algebraic Geometry. (4-4)

Lecture, three hours; outside research, three hours. Prerequisite(s): MATH 210A-MATH 210B-MATH 210C; MATH 256A or concurrent enrollment or equivalent. Algebraic varieties in affine and projective space, mappings and correspondences, sheaves and cohomology; detailed study of curves and special topics.

MATH 246A-MATH 246B. Algebraic Topology. (4-4)

Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 232B. An introduction to simplices, geometric complexes and polytopes, manifolds, dimension theory, the topological index, homotopy, homology and transformation groups.

MATH 260. Seminar. (1-4)

Variable hours. Prerequisite(s): consent of department. Seminar on special topics of mathematics in preparation for individual research. Course is repeatable.

MATH 289. Colloquium in Mathematics. (1)

Prerequisite(s): graduate standing. Specialized discussions by staff, students and visiting scientists on current research topics in Mathematics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MATH 290. Directed Studies. (1-6)

Prerequisite(s): consent of instructor. Research and special studies in mathematics. Graded Satisfactory (S) or No Credit (NC). Course may be repeated.

MATH 299. Research for Thesis or Dissertation. (1-12)

Prerequisite(s): consent of department. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MATH 302. Apprentice Teaching. (2)

Clinic, two hours. Prerequisite(s): Limited to Teaching Assistants and Associates in Mathematics. Supervised teaching in upper and lower-division Mathematics courses. Required fall and winter quarters of all Mathematics Teaching Assistants and Associates. Intended to aid in the learning of effective teaching methods such as the handling of Mathematics discussion sections, preparation and grading of examinations, and student relations. Graded Satisfactory (S) or No Credit (NC).

MATH 304. Clinic. (1-10)

Variable hours. Prerequisite(s): consent of department. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PROFESSIONAL COURSE
MECHANICAL ENGINEERING

Subject abbreviation: ME

Akula Venkatram, Ph.D., Chair
Department Office, A344 Bourns Hall
(909) 787-2417
http://www.engr.ucr.edu/mechanical

Professor
Qing Jiang, Ph.D.
Shankar Mahalingam, Ph.D.
Lung-Wen Tsai, Ph.D.
Kambiz Vafai, Ph.D.
Assistant Professors
Curtis Collins, Ph.D.
Frank Jacobitz, Ph.D.
Guanshui Xu, Ph.D.

Cooperating Faculty
Jie Chen, Ph.D. (Electrical Engineering)
Marek Chrobak, Ph.D. (Computer Science and Engineering)
Jay A. Farrell, Ph.D. (Computer Science and Engineering)
William A. Jury, Ph.D. (Environmental Sciences)
Ping Liang, Ph.D. (Electrical Engineering)
Umar Mohideen, Ph.D. (Physics)
Joseph M. Norbeck, Ph.D. (Chemical and Environmental Engineering)

MAJOR

Mechanical engineering is one of the oldest and broadest areas of engineering activity. Mechanical engineers design and manufacture most of the machines responsible for a high standard of living. These machines move and lift loads, transport people and goods, and produce energy and convert it to other forms. The design and production of machines requires training in a variety of disciplines including mechanical design, thermodynamics, fluid mechanics, and heat and mass transfer. With this type of broad training, mechanical engineers are in an excellent position to adapt themselves to the modern industrial environment, which is constantly changing in response to new developments in automation, the use of computers, and new sources of energy. The major curriculum is accredited by the Accreditation Board for Engineering and Technology. The major curriculum is accredited by the Accreditation Board for Professional Engineering. The Marlan and Rosemary Bourns College of Engineering provides special advisory services to aid community college transfer students in formulating their program and in remedying any deficiencies in required course work.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, The Marlan and Rosemary Bourns College of Engineering, in the Undergraduate Studies section, for requirements that students must satisfy.

Courses used to fulfill the College requirements must be selected from an approved list available in The College Office of Student Affairs. To provide depth in satisfying breadth in the Humanities and Social Sciences, courses must meet the following criteria:

1. At least two of the Humanities and/or Social Science courses must be upper-division.

2. At least two courses must be from the same subject area (for example, two courses in History), with at least one of the two being an upper-division course.

The Mechanical Engineering major uses the following major requirements to satisfy The College’s Natural Sciences and Mathematics breadth requirement.

1. One course in the biological sciences chosen from an approved list
2. CHEM 001A-CHEM 001B-CHEM 001C
3. MATH 009A

Major Requirements

The major requirements for the B.S. degree in Mechanical Engineering are as follows:

1. Lower-division requirements (76 units)
   a) Biological Science elective
   b) CHEM 001A-CHEM 001B-CHEM 001C
   c) CS 010
   d) EE 001A, EE 011A
   e) MATH 009A-MATH 009B-MATH 009C,
      MATH 010A-MATH 010B, MATH 046
   f) ME 007, ME 009, ME 010, ME 014
   g) PHYS 040A, PHYS 040B, PHYS 040C

2. Upper-division requirements (81 units)
   a) EE 132
   b) ENGR 100, ENGR 115, ENGR 116, ENGR 118
   c) ME 100, ME 103, ME 110, ME 115,
      ME 120, ME 130, ME 170A, ME 170B,
      ME 175A-ME 175B
   d) STAT 155
   e) Technical electives (16 units); four courses, selected from the following list, in consultation with an advisor: CHE 130/ENVE 130, CHE 136, EE 144, ENVE 138, ME 122, ME 131, ME 133, ME 153

Sample Program

Freshman Year

<table>
<thead>
<tr>
<th>Fall</th>
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<tr>
<td>MATH 009A-MATH 009B-MATH 010B, MATH 046</td>
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Sophomore Year

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Junior Year

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<td>ME 102, ME 110, ME 120, ME 130, ME 170A</td>
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<td>ENGR 100, ENGR 115, ENGR 116, ENGR 118</td>
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<td>STAT 155</td>
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Senior Year

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<td>EE 132</td>
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<td>Technical Electives</td>
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<td>Total Units</td>
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ME 007. Introduction to Engineering Fabrication Processes. (3)
Laboratory, three hours. Prerequisite(s): ME 009. Topics include principles of design for manufacture; precision measurements and tolerances; properties of metals such as hardness, machinability and responses to heat treatment; theory and practice of precision metal-casting operations; turning, boring, drilling, reaming, and milling; safety practices and procedures; and computer-controlled machining. Graded Satisfactory (S) or No Credit (NC).

ME 009. Engineering Graphics and Design. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): none. Graphical concepts and projective geometry relating to spatial visualization and communication in design, including technical sketching, instrument drawing, and computer-aided drafting and design.

ME 010. Statics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PHYS 040B, MATH 009C. Equilibrium of coplanar force systems; analysis of frames and trusses; noncoplanar force systems; friction; distributed loads.

ME 014. Properties of Engineering Materials. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 001A, PHYS 040B (may be taken concurrently). Applications of basic principles of physics and chemistry to the selection and use of engineering materials. Relationship between structure and mechanical and electrical properties of technological materials.

ME 100. Mechanical Engineering Thermodynamics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ENGR 100. Topics include the entropy function, entropy production, availability analysis of cycles, equations of state and thermodynamic property relations, multicomponent systems, combustion stoichiometry, thermomechanics, and chemical availability of fuels.

ME 103. Dynamics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CS 010, MATH 010A, ME 010. Topics include vector representation of kinematics and kinetics of particles; Newton’s laws of motion; force-mass-acceleration, work-energy and impulse-momentum methods; kinetics of systems of particles; and kinematics and kinetics of rigid bodies.

ME 110. Mechanics of Materials. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 046, ME 010. Topics include mechanics of deformable bodies subjected to axial, torsional, shearing, and bending loads; combined stresses; columns; energy design; and their applications to the design of structures.

ME 115. Mechanical Engineering Fluid Mechanics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ENGR 115 or consent of instructor. Topics include incompressible viscous flow, boundary layer flow, potential flows, and compressible flows.

ME 120. Dynamic Systems. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): EE 001A, EE 011A, ENGR 115, MATH 010B, ME 103; or consent of instructor. Topics include the modeling of dynamic engineering systems in various engineering domains, analysis of the response of linear systems models, and digital computer simulation.

ME 122. Vibrations. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): ME 120 or consent of instructor. Free and forced vibrations of lumped parameter systems with and without damping; resonance. Matrix methods for multidimensional systems. Normal modes, coupling, and normal coordinates. Use of conservation principles. Lagrange’s equation. Electromechanical analogs.

ME 130. Kinematic Analysis and Design of Mechanisms. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CS 010, ME 009, ME 103, ME 110. Topics include the kinematics, dynamics, and mechanical advantages of machinery; displacement velocity and acceleration analyses of linkages; the fundamental law of gearing and various gear trains; and computer-aided mechanism design and analysis. A design project is required.

ME 131. Kinematic Synthesis of Mechanisms. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): ME 130 or consent of instructor. Design of planar, spherical, and spatial mechanisms using both exact and approximate graphical and analytical techniques. A computer-aided design project is required.

ME 133. Introduction to Mechatronics. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): EE 132, ME 120. Topics include fundamental hardware and software components for the design and control of mechatronic systems; intermediate analog and digital electronics, sensors, transducers and actuators, basic analog and digital control of electric and fluid actuator systems, and hardware implementation of real-time control systems.

ME 153. Applied Finite Element Methods. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 010, EE 001A, EE 011A. Topics include the introduction to the finite element method (FEM) and its matrix formulation and computer implementation. Also covers mesh generation and data visualization techniques. A term project using FEM computer codes is required.

ME 170A. Experimental Techniques. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): CS 010, EE 001A, EE 011A, ME 103; or consent of instructor. Covers the principles and practice of measurement and control, and the design implementation of experiments. Topics include dimensional analysis, error analysis, signal-to-noise problems, filtering, data acquisition and data reduction, and statistical analysis. Includes experiments on the use of electronic devices and sensors, and practice in technical report writing.

ME 170B. Experimental Techniques. (4)
Laboratory, six hours; discussion, two hours. Prerequisite(s): ENGR 116, ME 115, ME 120, ME 170A; or consent of instructor. Analysis and verification of engineering theory using laboratory measurements in advanced, project-oriented experiments involving fluid flow, heat transfer, structural dynamics, thermodynamic systems, and electromechanical systems.

ME 175A. Mechanical Engineering Design. (4)
Lecture, two hours; discussion, one hour; laboratory, three hours. Prerequisite(s): ME 007 (may be taken concurrently); standing in Mechanical Engineering. Students, working in small teams, develop a mechanical engineering device or system from concept to initial design, detailed design using the engineering design process. Lecture topics include engineering design methodologies, machine components in design, and written and oral communication. Graded In Progress (IP) until both ME 175A and ME 175B are completed, at which time a final, letter grade is assigned.

ME 175B. Mechanical Engineering Design. (3)
Lecture, one hour; discussion, one hour; laboratory, six hours. Prerequisite(s): senior standing in Mechanical Engineering; ME 175A. Students fabricate and test the systems designed in ME 175A. A final oral presentation and written report of the design and prototype are required. Lecture topics include failure theories, life cycle design, human factors, engineering economics, engineering ethics, entrepreneurship, and intellectual property rights.

MICROBIOLOGY
Subject abbreviation: MCBL

David E. Crowley, Ph.D., Program Director
Program Office, 1151 Batchelor Hall
(800) 735-0717 or (909) 787-4116
http://cnas.ucr.edu/~micro/microintro.html

Professors
Nancy E. Beckage, Ph.D. Molecular Host-Parasite/Pathogen Interactions
(Entomology/Cell Biology and Neuroscience)
Michael D. Coffey, Ph.D. Phytophthora Taxonomy and Genetics (Plant Pathology)
Donald A. Cooksey, Ph.D. Bacterial Copper Resistance (Plant Pathology)
J. Allen Dodds, Ph.D. Molecular Virus-Host Interactions (Plant Pathology)
Joseph W. Eckert, Ph.D. Mechanism of Pungencide Action (Plant Pathology)
Brian A. Federici, Ph.D. Molecular Biology of Insect Pathogens (Entomology)
Dennis D. Focht, Ph.D. Bacterial Metabolism of Xenobiotics (Plant Pathology)
William T. Frankenberger, Ph.D. Microbial Transformation of Metals and Metalloids (Environmental Sciences)
Sarjeet S. Gill, Ph.D. Bacterial Toxic Action (Cell Biology and Neuroscience)
David J. Gumpf, Ph.D. Viral and Mycoplasmal Plant Pathogens (Plant Pathology)
Bradley C. Hyman, Ph.D. Mitochondrial DNA of Yeast and Nematodes (Biology)
Neil T. Keen, Ph.D. Plant-Pathogen Interactions (Plant Pathology)
John A. Menge, Ph.D. Mycology, Rhizosphere Biology (Plant Pathology)
Edward G. Plater, Ph.D. Host-Parasite Interactions (Nematology/Biology)
Neal L. Schiller, Ph.D. Human Host-Bacterial Pathogen Interactions (Biomedical Sciences)
Irwin W. Sherman, Ph.D. Host-Parasite Interactions in Malaria (Biology)
Curricula and Courses

Michael Stanghellini, Ph.D. Ecology, Epidemiology, and Control of Soil-borne Pathogens (Plant Pathology)
Marylyn V. Yates, Ph.D. Water and Wastewater Microbiology (Environmental Sciences)

Associate Professors
Wilfred Chen, Ph.D. Microbial Engineering (Chemical and Environmental Engineering)
Timothy J. Close, Ph.D. Plant and Microbial Genetics (Botany and Plant Sciences)
David E. Crowley, Ph.D. Rhizosphere Microbiology; Bioremediation (Environmental Sciences)
Howard S. Judelson, Ph.D. Molecular Genetics of Fungi (Plant Pathology)
A.L.N. Rao, Ph.D. Molecular Plant-Virus Interactions (Plant Pathology)
Linda L. Walling, Ph.D. Molecular Plant-Pathogen Interactions (Botany and Plant Sciences)

Assistant Professors
James E. Adaskaveg, Ph.D. Biology, Epidemiology, and Ecology of Plant Pathogenic Fungi (Plant Pathology)
James G. Borneman, Ph.D. Microbial Ecology of Soil-borne Plant Pathogens (Plant Pathology)
Marc Deshusses, Ph.D. Biodegradation, Biofiltration and Bioremediation of Pollutants (Chemical and Environmental Engineering)
Rajesh K. Mehra, Ph.D. Molecular Detoxification of Metals (Cell Biology and Neuroscience)

MAJOR
The Microbiology Program participates in the Biological Sciences major. See separate listing under Biological Sciences, Microbiology Track.

GRADUATE PROGRAM
The Graduate Program in Microbiology is an interdisciplinary program with participating faculty from the Departments of Biology, Botany and Plant Sciences, Cell Biology and Neuroscience, Entomology, Nematology, Plant Pathology, and Soil and Environmental Sciences, the Division of Biomedical Sciences, and the Bourns College of Engineering. Faculty research interests are concentrated in several disciplines in the areas of basic and applied microbiology. These disciplines include:

- The biology, physiology, pathogenesis and genetics of bacterial, fungal, parasitic and viral pathogens of animals, humans, insects, and plants, with special emphasis on molecular host-pathogen interactions
- Microbial ecology, soil microbiology and rhizosphere microbiology
- Bacterial transformation/detoxification of metals and xenobiotic chemicals
- Characterization of microbial toxins of insects

The program is designed to prepare students for teaching and research careers in colleges and universities, as well as basic and applied research in private, industrial and government laboratories. To attain this goal, a three-semester curriculum has been designed whereby students are expected to complete:

1. A core sequence of classes in microbiology:
   - MCBL 201, Microbial Physiology
   - BIOL 221/222, Microbial Genetics
   - MCBL 211/SWSC 211, Soil Microbial Ecology

2. A selection of elective courses in microbiology and other relevant fields chosen in consultation with the student’s major professor and the Student Advisory Committee in order to develop depth in particular areas of specialization

3. Research training in specific areas of microbiology

The program stresses the importance of innovative and independent laboratory research as the major component of the student’s education. Two years is the normative time for the completion of the M.S. (Plan I — Master’s Thesis) program, five years (15 quarters) is the normative time required to complete the Ph.D. program.

For admission into the graduate program in Microbiology, a student must have a Bachelor of Arts or Sciences degree from an accredited institution and an academic record which satisfies the minimum admission standards established by the Graduate Division, University of California, Riverside. In addition, results of the Graduate Record Examination (GRE) General Test scores (verbal, quantitative and analytical) must be submitted to the program by all applicants at the time of application.

Although no specific undergraduate degree specialization is required, applicants should have an adequate background in the physical and biological sciences, including the following or equivalent courses:

- CHEM 001A-CHEM 001B-CHEM 001C (General Chemistry)
- CHEM 112A-CHEM 112B-CHEM 112C (Organic Chemistry)
- BCH 110A-BCH 110B (Biochemistry)
- MATH 009A-MATH 009B (Calculus)
- STAT 100A or STAT 120A (Statistics)
- BIOL 102 (Genetics)
- BIOL 121A/MCBL 121A, BIOL 121B/MCBL 121B (Microbiology)
- BIOL 107A or BCH 110C (Molecular Biology)
- This list is intended to represent the minimum background required for students intending to pursue a graduate degree in microbiology. Additional course work and laboratory experiences in microbiology, biochemistry or genetics is highly desirable. However, upon the recommendation of the Graduate Advisory Committee, an occasional student may be admitted into the graduate program with one or more course work deficiencies; such students must satisfy these coursework deficiencies usually within the first, and no later than within the second, year of graduate study.

In addition to the above coursework, students are required to attend one seminar per week each quarter in programs collaborating with Microbiology. Students are also required to present one seminar each year. These seminars can be either on the student’s thesis research or related topics and can be presented in any of several program student seminar series, or at the Annual Microbiology Graduate Program Retreat at Lake Arrowhead.

Upon entering the program, a Student Advisory Committee is appointed for each student to help plan a program of study. The Student Advisory Committee consists of the student’s major professor, who serves as chair, and two other professors from the program with expertise in the student’s area of interest. Graduate students must meet at least annually with their Student Advisory Committee to plan their courses; however, students are encouraged to meet with their committee more often. Minutes of the meeting, prepared by the chair, are approved by the rest of the committee and then placed in the student’s file. In addition, prior to advance to candidacy, the student presents the Student Advisory Committee with a written summary of the student’s research progress and plans at the beginning of each academic year.

Master’s Degree
M.S. students must fulfill the requirements for Plan I (Master’s Thesis) of the Graduate Council. They must complete the core series of courses as well as three additional graduate level courses chosen in consultation with the Student Advisory Committee. Plan I requires 36 units, of which 24 must be in graduate level courses. No more than 6 units of MCBL 290 level courses may be used to satisfy this unit requirement. The student must also submit an acceptable research thesis. The M.S. Thesis Committee, consisting of three members, which may be the same as the Student Advisory Committee, is nominated by the Graduate Advisor after consultation with the student. The committee, once approved by the Graduate Dean, becomes responsible for the student’s academic guidance and evaluation. The Master’s degree is conferred at the end of the academic quarter in which all requirements have been satisfied.
Doctoral Degree

Ph.D. students must meet all requirements of the Graduate Council. Students will satisfactorily complete the core class requirements and complete a program of courses approved by the Student Advisory Committee. The Ph.D. degree is awarded upon passing the preliminary and qualifying examinations and demonstrating an ability to do original research by preparation and submission of an acceptable dissertation.

It is expected that students enrolled in the Microbiology Ph.D. program become actively engaged in a research project no later than the end of their first year, and research progress is monitored by the Student Advisory Committee until the student advances to candidacy and a dissertation committee is appointed.

The preliminary examination consists of a written, comprehensive examination based on general microbiology and required material in the student's area of specialization. The examination is administered by the Graduate Advisory Committee. If a student fails this examination, the advisory committee recommends either additional course work in specific areas of weakness, transfer to a terminal M.S. degree program, or withdrawal from the program. The preliminary examination may only be repeated once and must be passed for the student to continue in the Ph.D. program.

The preliminary examination is normally taken in the spring quarter of the second year. After completion of the preliminary examination, the qualifying committee established, and the oral qualifying examination is normally taken no later than the eighth quarter (year three) of academic work, not counting summer quarters.

A qualifying committee is nominated by the Graduate Advisory Committee and submitted to the Graduate Dean for approval. Suggestions of potential members of the qualifying committee may be submitted to the Graduate Advisory Committee by the student and the student's major professor. The qualifying committee is composed of five faculty members: three with expertise in the area of specialization in microbiology, one representing a different area from microbiology, and one outside member. The student's major professor may not serve on the qualifying committee. Prior to the oral qualifying examination, the student submits a written dissertation research proposal to the members of the qualifying committee. The oral examination covers the student's area of specialization and research field and must be passed for the student to continue in the program. Upon successful completion of the qualifying examination, the student is advanced to candidacy. The qualifying examination may be repeated only once.

The dissertation committee is nominated by the Graduate Advisor for approval by the Graduate Dean (upon successful completion of the qualifying examination) and is composed of the student's major professor and at least two other faculty members suggested by the student and the student's major professor. Before approval of the dissertation, the student is expected to present orally the dissertation research at an announced defense seminar.

One quarter of teaching experience is required for the Microbiology Ph.D. degree. The teaching requirement may be satisfied by serving as a TA in any of the microbiology courses listed.

There is no foreign language requirement for the Ph.D. degree in Microbiology.

UPPER-DIVISION COURSES

MCBL 120. Introduction to Plant Pathology. (3) F
Lecture, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 121A/MCBL 121A and BIOL 121B/MCBL 121B recommended. An introduction to the study of plant diseases. Topics include diseases and disease-causing agents, host-pathogen interaction during disease development, and strategies for disease management. An optional, separate laboratory is offered. Cross-listed with BIOL 120 and PEDA 120. Stanghellini

MCBL 120L. Introduction to Plant Pathology Laboratory. (1) F
Laboratory, four hours. Prerequisite(s): BIOL 005A, BIOL 005B; concurrent enrollment in BIOL 120/MCBL 120/PEDA 120 or consent of instructor; BIOL 121A/MCBL 121A and BIOL 121B/MCBL 121B recommended. Fundamentals in the use of laboratory instruments and techniques for the detection, isolation and identification of representative infectious agents that cause disease in plants. Cross-listed with BIOL 120L and PEDA 120L. Stanghellini

MCBL 121A. Microbiology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 01HC, CHEM 112C, MATH 099B or MATH 099H; or consent of instructor. An intensive introduction to the fundamental physiology and molecular biology of bacteria and viruses. Covers evolutionary origins of metabolic diversity, bacterial and viral molecular genetics, and an introduction to microbial pathogenesis. Cross-listed with BIOL 121A.

MCBL 121B. Microbiology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 121A/MCBL 121A with a grade of "C-" or better; consent of instructor. An intensive introduction to the fundamental physiology and molecular biology of bacteria and viruses. Covers research strategies for examining microbial pathogenic mechanisms. Cross-listed with BIOL 121B.

MCBL 121L. Microbiology Laboratory. (3)
Lecture, one hour; laboratory, six hours. Prerequisite(s): BIOL 121A/MCBL 121A with a grade of "C-" or better. Laboratory exercises in diagnostic bacteriology, basic virology, and epidemiology. Includes fundamental quantitative and diagnostic microbiological procedures, basic mechanisms of microbial genetic exchange, and a project examining bacterial epidemiology. Cross-listed with BIOL 121L.

MCBL 122. Food Microbiology. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 110A/BCH 110B (BCH 110B may be taken concurrently); BIOL 107A or BIOL 121A/MCBL 121A (BIOL 107A or BIOL 121A/MCBL 121A may be taken concurrently); or consent of instructor. Covers spoilage and preservation of food; food-borne pathogens and microbiological production of toxins, and classical and modern molecular methods for detection of food microorganisms. Cross-listed with BIOL 102. Focht

MCBL 123. Introduction to Comparative Virology. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 110A/BCH 110B, BIOL 121A/MCBL 121A or equivalents; or consent of instructor. An in-depth coverage of bacterial and fungal structure and function. Specific topic areas include: biosynthesis and composition of microbial structures; functional analysis of cell surface components; growth, morphogenesis, differentiation, and reproduction; microbial adaptation to environmental influences. Schiller

MCBL 197. Research for Undergraduates. (1-4)
Directed research, three to twelve hours. Prerequisite(s): consent of instructor; upper-division standing. Individual research in microbiology performed under the guidance of the staff or faculty. Letter grades are assigned to students presenting a research paper; others students are graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 9 units.

MCBL 201. Microbial Physiology. (3) F
Lecture, three hours. Prerequisite(s): BCH 110A/BCH 110B, BIOL 121A/MCBL 121A or equivalents; or consent of instructor. An in-depth coverage of bacterial and fungal structure and function. Specific topic areas include: biosynthesis and composition of microbial structures; functional analysis of cell surface components; growth, morphogenesis, differentiation, and reproduction; microbial adaptation to environmental influences. Schiller

MCBL 211. Microbial Ecology. (3)
Lecture, three hours. Prerequisite(s): graduate standing or consent of instructor. Application of ecological principles to microbial communities. Emphasizes methods for analysis of diversity and community structure and statistical methods relating genetic and biochemical fingerprints to functional properties. Case studies explore applications for agriculture, disease biocontrol, and bioremediation of environmental contaminants. Cross-listed with SWC 211.

MCBL 216. Biodegradation of Xenobiotic Chemicals. (3)
Lecture, three hours. Prerequisite(s): BCH 100, BIOL 121A/MCBL 121A, BIOL 121B/MCBL 121B, or equivalents. Explores the importance of microorganisms in metabolizing synthetic organic chemicals. Topics include ecology, physiology, growth, isolation, and identification of degradative bacteria; bioremediation processes; and environmentally related problems. Examines studies of catabolic pathways, including metabolic, enzymes, genes, and environmental factors. Cross-listed with ENTH 216 and SWC 216.
MCBL 216L. Laboratory in Biodegradation of Xenobiotic Chemicals (3)

Discussion, one hour; laboratory, three hours. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 102. An in-depth coverage of the genetics of microbes with emphasis on the primary data and the foundation of modern techniques using Escherichia coli and other prokaryotic systems. Topics include genome organization, plasmids, restriction-modification systems, mutation, transposable elements, regulation of gene expression, viruses, recombination, repair, and responses to stress. Cross-listed with ENIX 216L and SWSC 216L.

MCBL 221. Microbial Genetics. (4)

Lecture, three hours; discussion, one hour. Prerequisite(s): BCH 110C or BIOL 107A; BIOL 102. An in-depth coverage of the genetics of microbes with emphasis on the primary data and the foundation of modern techniques using Escherichia coli and other prokaryotic systems. Topics include genome organization, plasmids, restriction-modification systems, mutation, transposable elements, regulation of gene expression, viruses, recombination, repair, and responses to stress. Cross-listed with BIOL 221.

MCBL 250. Seminar in Microbiology. (1) S

Seminar, one hour. Prerequisite(s): graduate standing. Formal seminars by graduate students, faculty, and invited scholars on selected topics in microbiology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MCBL 290. Directed Studies. (1-6)

Research, three to eighteen hours. Prerequisite(s): graduate standing; consent of instructor and graduate advisor. Experimental or literature studies on specifically selected topics conducted under the direction of a faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MCBL 297. Directed Research. (1-6)

Research, 3 to 18 hours. Prerequisite(s): graduate standing. Directed research in microbiology performed prior to advancement to candidacy in preparation for thesis or dissertation projects. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MCBL 299. Research for Thesis or Dissertation. (1-12)

Research, three to thirty-six hours. Prerequisite(s): graduate standing. Original research in the area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MUSIC

Subject abbreviation: MUS

Frederick K. Gable, Ph.D., Chair
Department Office, 1339 Olmsted Hall
(909) 787-3343
http://www.music.ucr.edu

Professors
Byron Adams, D.M.A.
Philip Brett, Ph.D.
Frederick K. Gable, Ph.D.

Professors Emeriti
John C. Crawford, Ph.D.
Anthony F. Ginter, Ph.D.
Donald C. Johns, Ph.D.
Edwin J. Simon, Ph.D.

Associate Professor
Deborah A. Wong, Ph.D.

Assistant Professors
René T.A. Iploff, Ph.D.
Ethan Nestrudit-Lonjou, Ph.D.

Lecturers
Barbara A. Bennett, D.M.
Ruth Charloff, M.A.
Willie F. Helms, M.A.
Audrey J. Lamprey, M.M.
John W. Tanno, M.A., M.S.L.S.

Lecturers in Vocal and Instrumental Instruction
Kimberly A. Amin, M.M.
Piano
Denise Briese, M.A.
Bass Viol
William Casale, Ph.D.
Double Bass Viol
David W. Christensen, M.M.
Organ and Carillon
Robert D. Dominguez, Percussion
Larry Rahive, Jazz Piano
Donald T. Foster, M.M.
Clarinet
William Hannah, M.A.
Voice
Lynette Kobernik, M.M.
Oboe
Audrey J. Lamprey, M.M.
French Horn
Catherine Griff MacLaughlin, B.A.
Cello
Frances C. Moore, M.A.
Violin
Glen A. Myerscough, B.S.
Saxophone
Patrick L. Read, M.A.
Classical Guitar
Susan A. Roe, M.A.
Voice
Robert L. Scarano, B.A.
Jazz Guitar
Robert Schmidtke, Bassoon
David Scott, M.M.
Trumpet
Chet E. Smith, A.A.
Electric Guitar
Lucille A. Taylor, M.A.
Violin and Viola
Karen Togashi, M.M.

MAJOR

A music major not only gains a knowledge and awareness of music as a worldwide cultural phenomenon, but develops critical acumen through a manifold approach to sound in its many cultural settings. Historical, ethnographic and critical studies are complemented and deepened by music-writing and auditory skills (developed largely in the context of Western music), and by ensemble performance (available at present in Indonesian, Philippine, and Japanese as well as traditional Western forms) and by individual instrumental or vocal study. Students who have graduated from UCR with a major in music have with regularity gained admission to graduate schools at the major universities and conservatories throughout the country. Many former graduates have themselves become faculty members at an impressive list of colleges and universities, while others have earned teaching credentials at the primary and secondary level or have qualified for teaching at community colleges. Still others have entered related fields in the business of music, ranging from music librarianship to publishing and the record industry. The unusual degree of integration of intellectual, emotional, and physical skills provided by the music major has also been found excellent as preparation for a life in a wide number of pursuits outside music.

Student assistantships, work-study, Gluck Fellowships, and scholarships such as the Chancellor’s Performance Award and Arts Bridge are available to students. For further information or a department tour, call the Music Department, (909) 787-3343.

Throughout each academic year the Department of Music and Cultural Events sponsor more than fifty formal and informal concerts and recitals by campus ensembles, students, members of the performance faculty, and distinguished visiting artists. The Department also sponsors the UCR Contemporary Music Series. The majority of the Music Department concerts are open to the public.

The Department’s facilities include an electronic/computer music studio, practice rooms equipped with Steinway and Yamaha pianos, teaching studios, a carillon console, and computerized ear training equipment. The instrument collection, in addition to complete families of the modern orchestral and band instruments, is particularly rich in historical replicas: three pipe organs, two harpsichords, virginal, clavichord, forte-piano, lutes, theorbo, viol, and a large group of Renaissance and Baroque wind instruments. The Department has recently acquired a gamelan from Java in the five-tone sléndro tuning.

The UCR library has strong music research collections located in three facilities. Approximately 35,000 books about music may be found in the Rivera Library, along with journal backfiles and microforms. The Music Library, located in the Music Wing of Olmsted Hall, provides listening equipment and houses collections of some 12,000 LPs, more than 2,000 compact discs, and 22,000 music scores. A growing collection of audio CD-ROMs is also available. The Library's collections of film, video tapes, and laser discs, along with playback equipment, are housed in the Media Library, which is located in the Humanities and Social Sciences building. Online access to these collections and a variety of electronic resources is provided through MELVYL (the UC online union catalog) and the Library's electronic catalog, INNOPAC.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.
College Requirements

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The major requirements for the B.A. degree in Music are as follows:

1. Lower-division requirements (13-15 units plus keyboard proficiency)
   a) MUS 030A-MUS 030B-MUS 030C
   b) Three quarters of MUS 031 or proficiency for MUS 131
   c) Keyboard proficiency

2. Upper-division requirements (63 units plus quarterly ensemble)
   a) MUS 112A-MUS 112B-MUS 112C
   b) MUS 130A, MUS 130B
   c) Three quarters of MUS 131 or proficiency
   d) Six quarters MUS 180 (E-Z)
   e) Twenty-eight (28) additional upper-division units from the following.
      (No performance courses numbered MUS 160 to MUS 180 (E-Z) may be used to satisfy this requirement.)
      (1) MUS 138
      (2) One course in music in world cultures (MUS 121-129)
      (3) One course from the MUS 113-119 series or MUS 191 (E-Z)

f) Participation in a major ensemble (MUS 160-165, MUS 168/AST 168) each quarter

Note: Because of additional performance requirements appropriate to the music curriculum, Music majors have been granted an exemption from the 80-unit limit on courses in the major so that 102 music units may be counted toward the B.A.

Students emphasizing the study of music in world culture are advised to take at least two additional courses in the MUS 120 series in addition to MUS 168/AST 168.

Students emphasizing Western music history are advised to take at least two additional courses in that area.

Students emphasizing music theory and composition are advised to take MUS 135 or MUS 137 and at least two additional courses in music theory or composition.

Students seeking a teaching credential are advised to take MUS 133, MUS 150A-MUS 150B-MUS 150C-MUS 150D, MUS 151, and MUS 152. Consult the Graduate School of Education for credential requirements.

Examinations and Auditions

The ability to play simple piano music is required of all majors. Those lacking keyboard proficiency when the major is declared are required to enroll in a special section of MUS 080P to prepare them for the proficiency examination. This examination should be passed by the junior year. Consult the Department for examination requirements.

All students intending to enroll in MUS 030A must take a music theory diagnostic examination, which is given at the beginning of instruction.

MUS 031 is normally taken for a total of three quarters, or until proficiency for admission to MUS 131 is achieved. The proficiency level of MUS 131, or the completion of three quarters of MUS 131, is required for graduation.

All students normally participate in a major ensemble each quarter. Admission to any ensemble course is by consent of instructor. All students intending to participate in an ensemble course must audition during registration.

Fees

All students enrolled in MUS 080 (E-Z) and MUS 180 (E-Z) are required to pay a lesson fee (check with the Department Office for current fee).

Enrollment in one section of MUS 180 (E-Z) per quarter is provided at no additional cost to upper-division Music majors for a maximum of six quarters.

Minor

The minor in Music has been designed for students who wish to continue their musical studies while pursuing another major. Within the required 24 upper-division units, the minor provides basic skills in music theory and first-level studies in music history and literature while still offering modest flexibility to pursue individual interests.

1. Lower-division preparation: (16 units)
   a) MUS 001 or equivalent
   b) MUS 030A-MUS 030B-MUS 030C

2. Upper-division requirements (24 units)
   a) Eight (8) units from MUS 112A-MUS 112B-MUS 112C
   b) Four (4) units from MUS 121-129
   c) Eight (8) units selected from MUS 121-129, MUS 130A, MUS 130B, MUS 133-139, MUS 191 (E-Z)
   d) Four (4) additional units in ensemble performance

As a freshman or sophomore, the student should complete MUS 030A-MUS 030B-MUS 030C (Harmony). This is a prerequisite for all later studies in the minor. Harmony has a prerequisite of MUS 001 (Introduction to Basic Musical Concepts) or the equivalent.

Two required courses from MUS 112A-MUS 112B-MUS 112C should be completed following MUS 030A-MUS 030B-MUS 030C and not later than the junior year.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Education Abroad Program

The Music Department encourages students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units toward graduation. Because strategy in choosing courses to be taken here and courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult the department advisor for assistance. For further details, see Education Abroad Program under International Services Center in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the curricula and courses section.

GRADUATE PROGRAM

Master’s Degree

The Master of Arts degree is offered with a specialization in three areas: composition, ethnomusicology, and musicology. Students are encouraged to view music in the broad context of culture: communication between the intra-disciplinary areas is built into the program, and courses outside the department are either encouraged or required in order to develop an interdisciplinary outlook. The musicology option is also offered with a special emphasis in performance and historical performance practice.

An undergraduate background equivalent to that of a music major at the University of California, Riverside, including piano proficiency and musicianship (ear training) is usually required for admission. Evidence of superior intellectual ability in another field combined with some demonstrable expertise in any musical tradition will also be viewed favorably. Though applicants must provide Graduate Record Examination General Test scores, scores for the music subject area are not required. Prospective students should submit an example of their expository writing. Musical scores or audition tapes should also...
2. Ethnomusicology
   a) MUS 207 (Pro-seminar in Ethnomusicology)
   b) MUS 252 (Seminar in Music Transcription, Analysis, and Representation)
   c) MUS 270/ANTH 270 (Seminar in Special Topics in Ethnomusicology)
   d) Two courses from MUS 126-129
   e) One graduate or upper-division graduate course in Composition, Music Theory or Musicology from a list specified by the department
   f) Two courses outside the department relevant to the student's interests

3. Musicology
   a) MUS 201 (Pro-seminar in the Analysis of Western Music)
   b) MUS 206 (Pro-seminar in Musicology)
   c) MUS 207 (Pro-seminar in Ethnomusicology)
   d) Three seminars from MUS 261, MUS 262 (E-Z), MUS 263 (E-Z)
   e) One graduate or upper-division graduate course in Composition, Music Theory or Musicology from a list specified by the department
   f) One course outside the department relevant to the student's interests, or MUS 290

The thesis consists of an essay of substantial scope.

The descriptions of many courses listed below carry the phrase "or consent of instructor." This is meant to encourage musically qualified students who are not majors to participate in the courses and activities of the Department. Any nonmajor having interest in a specific course should confer with the instructor about the qualifications for enrollment.

LOWER-DIVISION COURSES

MUS 001. Basic Musical Concepts. (4)
Lecture, three hours; discussion, one hour. Fundamentals of music, including notation, rhythm, major and minor scales, intervals, tonality, triads. Includes ear training, sight singing, and elementary analysis. Designed for students who need basic musical literacy. Open to nonmajors and those with no previous musical background.

MUS 002. Introduction to Western Music. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): None. A survey of the major styles and genres of Western music. Emphasis on creative and analytical listening without the use of musical notation. Designed for the general student with an interest in music and cultural practice. No previous musical background required.

MUS 005. Women in Music. (4)
Lecture, three hours; assigned listening, three hours. Prerequisite(s): None. A survey course designed primarily for nonmajors. Examines representative works by women composers from antiquity to the present.

MUS 006. Introduction to World Music. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): None. A survey of people, identity, and music making. Includes listening to music from many cultural contexts. Also covers a variety of scholarly topics in world music. Cross-listed with ANTH 006.

MUS 008. Popular Music Cultures of the United States. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): None. Explores the so-called popular musics and music cultures of the United States and the social history of these cultures to provide students with a sonic understanding of these extremely fractured, ever reconstituted "United States."

MUS 014. Popular Musics of the World. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): None. Introduction to issues surrounding popular and urban musics of the world, focusing on three major geopolitical areas: Africa, Asia, and the Americas. Emphasizes the relationship between mass-mediated music and issues of cultural hegemony, resistance, and subversion. Analyzes the cultural impact of media technologies on music performance and reception. Cross-listed with ETST 014 and URS 014.

MUS 030A-MUS 030B-MUS 030C. Harmony. (4-4-4)
Lecture, three hours; consultation, one hour. Prerequisite(s): MUS 001 or a passing score on an equivalent examination. Concurrent enrollment in MUS 031 or MUS 131; for MUS 030B: MUS 030A or consent of instructor, for MUS 030C MUS 030B or consent of instructor. Diatonic and chromatic harmony of the common practice period.

MUS 031. Musicianship I. (1)
Laboratory, two to three hours; individual study, one hour. Prerequisite(s): MUS 001 or the passing of an equivalent examination. Sight-singing and ear-training laboratory.
including basic keyboard harmony. Normally graded Satisfactory (S) or No Credit (NC) only. but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course may be repeated for a total of 3 units.

**MUS 080 (E-2). Vocal and Instrumental Instruction.** (1-2)
Studio, one-half hour to one hour; individual practice, five to ten hours. Prerequisite(s): MUS 001 or equivalent; consent of instructor. Students take a half or one-hour lesson and practice 5 to 10 hours each week. See the note regarding fees under the Major Requirements section. Offered as demand indicates. E. Voice; F. Piano; G. Harpsichord; H. Organ; I. Violin; J. Viola; K. Cello; L. Bass Viol; M. flute; N. Oboe; O. Clarinet; P. Bassoon; Q. French Horn; R. Trumpet; R0. Rondalla; S. Trombone; SL. Tuba; T. Percussion; U. Guitar; V. Classical/Jazz/Electric Bass; W. da vamba; W. Saxophone; X. Recorder; Y. Carillon; Z. Lute. Normally graded Satisfactory (S) or No Credit (NC), but students may petition for a letter grade on the basis of performance before a jury or at a recital. Segments are repeatable.

**MUS 091. Seminar in Music.** (2)
Seminar, two hours. Prerequisite(s): none. Designed primarily for non-majors on the topic of music and literature. Graded Satisfactory (S) or No Credit (NC).

## UPPER-DIVISION COURSES

**MUS 112A-MUS 112B-MUS 112C. History of Western Music.** (4-4-4)
Lecture, three hours; discussion, one hour. Prerequisite(s): MUS 030A-MUS 030B-MUS 030C or consent of instructor. An intensive survey of music history and literature from the Middle Ages to the present. Involves score reading, listening, and analysis of pieces with emphasis on historical characteristics, 112A: The Middle Ages to 1700; 112B: 1700-1900; 112C: The Twentieth Century.

**MUS 113A. Opera.** (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Study of selected operas from the Western repertory for 1600 to the present.

**MUS 116. Music of J. S. Bach.** (4)
Lecture, three hours; individual study three hours. Prerequisite(s): upper-division standing or consent of instructor. Critical and analytical exploration of selected works by J. S. Bach. Usually devoted to specific genres within his output viewed in their musical and cultural context.

**MUS 117. Music and Religion.** (4)
Lecture, three hours per week; fieldwork, 20 hours per quarter; individual research, three hours per week; written work, four hours per week. Prerequisite(s): MUS 030A-MUS 030B-MUS 030C or consent of instructor. Investigation and evaluation of the musical practices, styles, and functions within the world’s religious communities of the past and present. Special attention is devoted to the sources of the musical usages and the connections between the musical practices.

**MUS 121. Ethnomusicological Approaches to Music.** (4)
Lecture, three hours; individual study three hours. Prerequisite(s): upper-division standing or consent of instructor. Investigation of the path between European and North American ways of knowing and the art and music of the “others” that these epistemologies seek to understand. Material includes philosophical and ethnomusicological texts, ethnographies and case studies.

**MUS 122. Ethnomusicalological Theory and Practice.** (4)
Lecture, three hours; fieldwork, three hours. Prerequisite(s): MUS 121 or consent of instructor. Students apply the knowledge gained in MUS 121 to actual field situations that they themselves define.

**MUS 124. Music of Asia.** (4)
Lecture, three hours; music listening; one hour; individual study, two hours. Prerequisite(s): upper-division standing or consent of instructor. Explores music as a window on the cultural politics of Asian musics. Examines expressive culture as a constitutive site for ethnic identities and emergent political formations. Covers musics of Asian immigrants and of subsequent generations, including Asian American jazz and hip-hop. Cross-listed with AST 124.

**MUS 125. Music of Central America, Mexico, and the Caribbean.** (4)
Lecture, three hours; extra reading and listening to prepared tapes of music, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of different musical traditions from Central America, Mexico, and the Caribbean, with an emphasis on popular music. Examines the impact of intercultural contact on the musical styles of these regions. A background in Western music is not required.

**MUS 126. Music and Gender in Cross-Cultural Perspectives.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of gendered performance genres from a number of cultures. Seeks to familiarize the student with gender-specific music and notions of gender that are often constructed, maintained, transmitted, and transformed through music and performance. Designed for students interested in music, anthropology, and gender studies. Cross-listed with ANTH 177 and WMST 126.

**MUS 127. Music Cultures of Southeast Asia.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in four major geopolitical regions of Asia: Central, East, South, and Southeast. No Western music background is required. Cross-listed with ANTH 177, AST 127, DNCE 127, and EIST 122.

**MUS 128. Performing Arts of Asia.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theatre, and ritual in four major geopolitical regions of Asia: Central, East, South, and Southeast. No Western music training is required. Course is repeatable to a maximum of 8 units. Cross-listed with ANTH 128, AST 128, DNCE 128, and THES 128.

**MUS 129. Music Cultures of Africa.** (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of African performance, addressing the large culture areas of the continent. Emphasizes African aesthetics. Special attention is paid to contemporary popular music, its roots in older genres, and its ongoing role in postcolonial politics. Cross-listed with ETSI 118.

**MUS 130A. Counterpoint.** (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): MUS 030A-MUS 030B-MUS 030C; concurrent enrollment in MUS 031 or MUS 131. Study of contrapuntal techniques. Analysis of models centering on the sixteenth century, with exercises to develop manipulative skills in modal counterpoint.

**MUS 130B. Counterpoint.** (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): concurrent enrollment in MUS 031 or MUS 131; MUS 130A. Study of contrapuntal techniques. Analysis of models centering on the eighteenth century with exercises to develop manipulative skills in tonal counterpoint.

**MUS 131. Musicianship II.** (1)
Lab, two to three; individual study one hour. Prerequisite(s): MUS 031. Sight-seeing and ear-training laboratory including keyboard harmony. Normally graded Satisfactory (S) or No Credit (NC) only, but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course may be repeated for a total of 3 units.

**MUS 133. Instrumentation.** (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): MUS 030A-MUS 030B-MUS 030C or consent of instructor. Investigation of the technical and color possibilities of various instruments, with scoring projects.

**MUS 134. Orchestration.** (4)
Lecture, three hours; individual study three hours. Prerequisite(s): MUS 030C or consent of instructor. Advanced scoring projects with emphasis on stylistic aspects and relationship of orchestral color to form.

**MUS 135. Linear and Motivic Compositional Techniques.** (4)
Lecture, three hours; individual study three hours. Prerequisite(s): MUS 030C or consent of instructor. Develops compositional skills through a series of graduated exercises focusing upon motivic manipulation. Includes collective discussion of compositional solutions. Weekly exercise sets and a final project are required. Course is repeatable to a maximum of 12 units.

**MUS 136. Jazz Theory.** (4)
Lecture, three hours; extra reading and listening to music tapes, three hours. Prerequisite(s): MUS 030A-MUS 031; or consent of instructor. Examines concepts and practices in harmony, melody, rhythm, and form as they relate to jazz and other popular idioms. Provides basic ear training for the recognition of changes in traditional jazz tunes, primary blues forms, modulations, and classic jazz bridges.

**MUS 137. Freestyle Compositional Techniques.** (4)
Lecture, three hours; individual study three hours. Prerequisite(s): MUS 030A-MUS 030B-MUS 030C or consent of instructor. Assists the student in the successful composition of pieces in a variety of genres and media. Topics include compositional models and the creation of musical scores. Course is repeatable to a maximum of 12 units.

**MUS 138. Form and Analysis in Western Music.** (4)
Lecture, three hours; assigned special projects, three hours. Prerequisite(s): MUS 030A-MUS 030B-MUS 030C or consent of instructor. Different approaches to analysis using works in contrasting styles. Study of the dynamic design produced by the musical elements functioning in context.

**MUS 139. Basic Electronic and Computer Music Composition.** (4)
Lecture, three hours; studio, two to three hours. Prerequisite(s): MUS 030A or MUS 030B or MUS 030C.
CURRICULA AND COURSES

PERFORMANCE COURSES

MUS 150A-MUS 150B-MUS 150C-MUS 150D. Instrumental Techniques. (2-2-2-2)
Lecture, two hours. Study of basic techniques of orchestral instruments. A: String; B: Woodwinds; C: Brasses; D: Percussion.

MUS 151. Orchestral Conducting. (4)
Lecture, three hours; studio, two to three hours. Prerequisite(s): consent of instructor. Fundamentals of baton technique, score study, transposition, and stylistic analysis as they relate to problems of conducting.

MUS 152. Choral Conducting. (4)
Lecture, three hours; studio, two to three hours. Prerequisite(s): consent of instructor. Study of choral repertoire, rehearsal methods, voice production, and techniques of conducting.

MUS 155. Graduate Conducting. (2)
Lecture, three hours; studio, two to three hours. Prerequisite(s): consent of instructor. Graduate repertoire, rehearsal methods, and conducting Fundamentals of instrumental techniques. A: String; B: Woodwinds; C: Brasses; D: Percussion.

MUS 158. Advanced Choral Conducting. (1-2)
Rehearsals, six to twelve. Prerequisite(s): approval of music faculty; limited to advanced performers only. Preparation and presentation of a formal recital. Graded Satisfactory (S) or No Credit (NC) only.

MUS 160. Orchestra. (1-2)
Studio, two to six hours. Prerequisite(s): consent of instructor. Study and performance of standard orchestral literature. Normally graded Satisfactory (S) or No Credit (NC) only; but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course may be repeated for credit.

MUS 161. Collegium Musicum. (1-2)
Activity, two to six hours. Prerequisite(s): consent of instructor. Study and performance of Medieval, Renaissance, and Baroque music. Normally graded Satisfactory (S) or No Credit (NC) only; but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. May be repeated for credit.

MUS 162. Choral Society. (1-2)
Studio, two to six hours. Prerequisite(s): consent of instructor. Study and performance of standard choral literature. Normally graded Satisfactory (S) or No Credit (NC) only; but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. May be repeated for credit.

MUS 163. Chamber Singers. (1-2)
Studio, two to six hours. Prerequisite(s): consent of instructor. Study and performance of works selected from different genres and periods. Normally graded Satisfactory (S) or No Credit (NC) only; but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

MUS 164. Jazz Ensemble. (1-2)
Studio, two to six hours. Prerequisite(s): consent of instructor. Study and performance of literature for large jazz ensemble and stage band, and preparation of improvised solos. Normally graded Satisfactory (S) or No Credit (NC) only; but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

MUS 165. Concert Band. (1-2)
Studio, two to six hours. Prerequisite(s): consent of instructor. Study and performance of literature for the concert band. Normally graded Satisfactory (S) or No Credit (NC) only; but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable.

MUS 166. Chamber Music. (2)
Studio, two to six hours. Prerequisite(s): consent of instructor. Study and performance of chamber music. Open to all instrumentalists at intermediate or advanced performance levels. Normally graded Satisfactory (S) or No Credit (NC) only; but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. May be repeated for credit.

MUS 167. Recital. (1-2)
Rehearsals, six to twelve. Prerequisite(s): approval of music faculty; limited to advanced performers only. Preparation and presentation of a formal recital. Graded Satisfactory (S) or No Credit (NC) only.

MUS 168. Javanese Gamelan Ensemble: Beginning. (2)
Studio, six hours. Prerequisite(s): upper-division standing and consent of instructor. Study and performance of the Central Javanese gamelan, consisting mainly of gongs and gong-chime instruments. Readings and discussions focus on Javanese culture. Normally graded Satisfactory (S) or No Credit (NC) only; but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Cross-listed with AST 168.

MUS 169. Taiko Ensemble. (1)
Studio, two hours. Prerequisite(s): upper-division standing or consent of instructor. A: String; B: Woodwinds; C: Brasses; D: Wind; E: Voice; F: Piano; G: Harpsichord; H: Organ; I: Violin; J: Viola; K: Cello; L: Bass Viol; M: Flute; N: Oboe; O: Clarinet; P: Bassoon; Q: French Horn; R: Trumpet; S: Trombone; T: Tuba; U: Percussion; V: Guitar (Classical/Jazz/Electric Bass); W: Viola da gamba; X: Saxophone; Y: Recorder; Z: Viola; A: Cello. Normally graded Satisfactory (S) or No Credit (NC) only; but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Cross-listed with AST 169.

MUS 180. Advanced Vocal and Instrumental Instruction. (2)
Studio, one hour; individual practice, five to ten hours. Prerequisite(s): Music major with upper-division standing or consent of instructor. Upper-Division Music majors may advance enroll. All other students may not advance enroll, but they may enroll with instructor's consent. See note regarding fees under Major Requirements Section. E: Voice; F: Piano; G: Harpsichord; H: Organ; I: Violin; J: Viola; K: Cello; L: Bass Viol; M: Flute; N: Oboe; O: Clarinet; P: Bassoon; Q: French Horn; R: Trumpet; S: Trombone; T: Tuba; U: Percussion; V: Guitar (Classical/Jazz/Electric Bass); W: Viola da gamba; X: Saxophone; Y: Recorder; Z: Viola; A: Cello. Normally graded Satisfactory (S) or No Credit (NC) only; but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable. Cross-listed with AST 169.

MUS 190. Special Studies. (1-5)
May be repeated for credit. Cross-listed with MUS 199H. Senior Honors Research. (1-5)

MUS 195. Senior Thesis. (1-4)
Prerequisite(s): major standing. Independent reading in materials not covered in course work. May be repeated for credit. Total credit may not exceed 4 units.

MUS 196. Senior Honors Research. (1-5)
Prerequisite(s): major standing. Research in materials not covered in course work. May be repeated for credit. Total credit may not exceed 6 units.

MUS 199H. Senior Honors Research. (1-5)
Prerequisite(s): major standing. Research in materials not covered in course work. May be repeated for credit. Total credit may not exceed 6 units.

MUS 199L. Individual Internship. (1-12)
Variable hours. Prerequisite(s): upper-division standing, evidence of prior arrangements with the professional(s) involved, approval by the department chair after consulting the music faculty. Work with an appropriate professional individual or organization to gain experience and skill in the student's chosen specialty. Course will be graded Satisfactory (S) or No Credit (NC). May be repeated to a total of 16 units.

MUS 200. Music Bibliography. (4)
Seminar, three hours; research, one hour. Fundamentals of music bibliography. Emphasis on reference materials and other standard bibliographical tools.

MUS 201. Proseminar in the Analysis of Western Music. (4)
Seminar, three hours; individual guided research, three hours. Prerequisite(s): graduate standing. Analysis of selected musical works from various periods exploring different music-theory models.

MUS 205. Proseminar in Musicology. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): MUS 200. Study of significant issues and recent developments in musicology and criticism. Study and practice of expository writing about music.

MUS 206. Proseminar in Ethnomusicology. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing. Explores ethnomusicology as a discipline, focusing on the relationships between ethnomusicology and musicology, and on ethnomusicology as an interdisciplinary field drawing on performance studies, ethnopoetics, postmodernism, translational theories, and postcolonialism.

MUS 250. Seminar in Music Theory. (4)
Seminar, three hours; research, three hours. Prerequisite(s): MUS 200 and 201 or consent of instructor. Historical study of the theory of western music. E: History of Theory; G: Neo-Classicism; H: Twentieth Century Theorists. I-2 topics to be announced.
MUS 252. Music Transcription, Analysis, and Representation. (4) Seminar, three hours; outside research, three hours. Prerequisite(s): MUS 207, graduate standing, or consent of instructor. Comparison of different techniques, methodologies, and ideologies of music transcription, analysis, and representation. By viewing notation as a cultural artifact, students consider the implicit biases and cultural values that are perpetuated through music transcription. Weekly transcription assignments and a final project are required.

MUS 255. Field Methods in Ethnomusicology. (4) Seminar, three hours; outside research, one hour; field, two hours. Prerequisite(s): graduate standing. A theoretical and practical introduction to fieldwork in music and performance. Each student focuses on a different performance group and documents its activities. Interviewing, audio taping, videotaping, transcribing music and dance, and describing performance events are covered. Cross-listed with ANTH 255.

MUS 257. Seminar in Linear and Motivic Composition. (4) Seminar, three hours; individual study, three hours. Prerequisite(s): graduate standing or consent of instructor. Develops compositional skills through a series of graded exercises focusing upon motivic manipulation. Includes completion of submitted sets and a final project are required. Students construct compositional exercises and critique each other's solutions. Course is repeatable to a maximum of 12 units.

MUS 258. Seminar in Free Composition. (4) Seminar, three hours; consultation, one hour. Prerequisite(s): graduate standing or consent of instructor. Individual projects and issues in musical composition. Course is repeatable to a maximum of 12 units.

MUS 261. Seminar in Performance Practice. (4) Seminar, three hours; consultation, one hour. Prerequisite(s): MUS 200 and MUS 201, or consent of instructor. Investigations into the historically accurate performance styles of music based on information contemporary with the music. Topics and content will vary each quarter depending on student interest. May be repeated for credit.

MUS 262 (E-Z). Seminar in Western Music History. (4) Seminar, three hours; individual study, three hours. Prerequisite(s): MUS 206, graduate standing, or consent of instructor. Selected issues in the history of music in the context of social, political, religious and intellectual culture of the West during different periods.

MUS 263 (E-Z). Seminar in Special Topics in Musicology. (4) Seminar, three hours; individual guided research, three hours. Prerequisite(s): MUS 206, graduate standing, or consent of instructor. Addresses such topics as Music and Culture, Music and Poetry, Nationalism, Gender and Sexuality in Music, Individual Genres and Composers.

MUS 270. Special Topics in Ethnomusicology. (4) Seminar, three hours; outside research, three hours. Prerequisite(s): MUS 207, graduate standing, and/or consent of instructor. Focuses on current scholarship in ethnomusicology and related fields. Themes vary, but emphasis is usually on the methodology or the study of particular regions or performance traditions. For further information, see Department. Course is repeatable to a maximum of 8 units. Cross-listed with ANTH 270.

MUS 290. Directed Studies. (1-6) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

MUS 291. Individual Studies in Coordinated Areas. (1-6) Prerequisite(s): graduate standing, approval of instructor and graduate advisor. A program of study designed to advise and assist graduate candidates who are preparing for M.A. examinations. A student may take up to 12 units. Graded Satisfactory (S) or No Credit (NC). Does not count toward the unit requirement for the M.A.

MUS 292. Concurrent Analytical Studies in Music. (1-4) Prerequisite(s): graduate standing; approval of instructor and graduate advisor. Each 292 course will be taken concurrently with some 100-series course but on an individual basis. It will be devoted to research, criticism, and written work of a graduate order commensurate with the number of units elected. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

MUS 297. Directed Research. (1-6) Prerequisite(s): graduate status and consent of instructor and graduate advisor. Individual graduate student research under the sponsorship of specific faculty members, on topics and selected problems in theoretical and historical research in music not directly related to student's thesis. Graded Satisfactory (S) or No Credit (NC).

MUS 299. Research for Thesis or Dissertation. (1-12) Graded Satisfactory (S) or No Credit (NC). Course is repeatable.
**NEUROSCIENCE UNDERGRADUATE MAJOR**

<table>
<thead>
<tr>
<th>Subject abbreviation: NRSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Glenn Stanley, Ph.D., Committee Chair</td>
</tr>
<tr>
<td>College of Humanities, Arts, and Social Sciences (909) 787-5388</td>
</tr>
<tr>
<td>1419 Life Sciences Psychology</td>
</tr>
<tr>
<td>College of Natural and Agricultural Sciences (909) 787-4186, 1001 Bachelor Hall North</td>
</tr>
</tbody>
</table>

**Committee in Charge**

- Michael E. Adams, Ph.D.
- (Cell Biology and Neuroscience/Entomology)
- John H. Ashe, Ph.D.
- (Cell Biology and Neuroscience/Psychology)
- Curt Burgess, Ph.D. (Psychology)
- Christine Chiang, Ph.D. (Psychology)
- Margarita C. Carrié-Callazo, Ph.D. (Cell Biology and Neuroscience)
- Scott N. Currie, Ph.D.
- (Cell Biology and Neuroscience)
- Glenn I. Hatton, Ph.D.
- (Cell Biology and Neuroscience)
- Peter W. Hickmott, Ph.D. (Psychology)
- Walter H. Metzner, Ph.D. (Biology)
- B. Glenn Stanley, Ph.D.
- (Cell Biology and Neuroscience/Psychology)
- Raphael Zidovetzki, Ph.D.
- (Cell Biology and Neuroscience)
- Patricia O’Brien, Ph.D.
- Dean, College of Humanities, Arts, and Social Sciences, ex officio
- Steven R. Angle, Ph.D.
- Interim Dean, College of Natural and Agricultural Sciences, ex officio

**MAJOR**

The Neuroscience major is an intercollege major offered by the College of Humanities, Arts, and Social Sciences and the College of Natural and Agricultural Sciences. The Neuroscience major offers upper-division courses which contribute to an academic program emphasizing the functioning of nervous systems at the molecular, cellular, system, behavioral, and cognitive levels. Some of the topics covered include neuroanatomy, neurophysiology, and neurochemistry in human and other animals; neural mechanisms underlying sensory system function and perception; neural organization of behavior; development of the nervous system; and neural mechanisms of learning and memory.

The Neuroscience major replaces the former Psychobiology major, which stopped accepting new students after Spring 1998. Students currently working toward the Psychobiology degree (as well as readmitted students and transfer students accepted prior to Fall 2000) will be allowed to complete the Psychology degree requirements but must graduate by June 2002. For a listing of Psychobiology degree requirements see the 1997-98 UCR General Catalog.

Both a B.A. and a B.S. degree are offered by each college. When students declare the major, they choose from which college they wish to have their degree awarded. Students whose degrees are awarded by the College of Humanities, Arts, and Social Sciences are advised in and have their records maintained by the Department of Psychology; students whose degrees are awarded by the College of Natural and Agricultural Sciences are advised in and have their records maintained by the Department of Cell Biology and Neuroscience. Breadth requirements vary by college, and students must fulfill the breadth requirements of the college they choose.

For more information about student advising or requirements for admission to professional and technical schools, contact the Department of Cell Biology and Neuroscience, (909) 787-4186 or the Department of Psychology, (909) 787-5386, University of California, Riverside, Riverside, CA 92521.

**Career Opportunities**

The Neuroscience major provides preparation for a variety of careers including those involving laboratory and field work. The major can lead to graduate studies in physiological psychology; neuropharmacology; animal behavior; and neuroscience. Some students find this major suitable as preparation for teaching, counseling, or medical and allied health fields. The major does not include courses which are primarily premedical or courses in human personality, counseling, and social psychology.
The Neuroscience major offers strong preparation in basic science, and the upper-division courses provide information about the internal mechanisms and processes of humans and other animals. Counselors and clinicians who complete this major should be better qualified to consider underlying causes of patient behavior. For reasons such as this, some students with an interest in counseling or clinical psychology select the Neuroscience major and then include some elective courses in human personality, psychotherapy, counseling, and social behavior.

**Degree Requirements**

**University Requirements**

See the Undergraduate Studies section for requirements that all students must satisfy.

**College Requirements**

College breadth requirements vary depending on which college is chosen to award the degree. For a detailed list of breadth requirements and a summary of units, see the Undergraduate Studies section of this catalog. Students are urged to consult their advisor regarding requirements.

The following restrictions and additions apply to college breadth requirements for the Neuroscience major.

**For the College of Humanities, Arts, and Social Sciences**

**Humanities.** Foreign language at level 4 or above for the B.A. may be used to fulfill up to 8 units of the Humanities breadth requirement. PHIL 139 and PHIL 153 are recommended.

**Social Sciences.** Psychology courses may not be used as part of the Social Sciences breadth requirement if a Biology course is used to meet any part of the Natural Sciences and Mathematics breadth requirement.

**Foreign Language.** In fulfilling the Foreign Language breadth requirement for both the B.A. and the B.S. degrees, a modern language such as Spanish, Russian, Chinese, German, or French must be used. Further, fourth-quarter level proficiency in one foreign language (not level 2 in two languages) is required.

**Natural Sciences and Mathematics.** The Neuroscience Core in the Neuroscience major satisfies the Natural Sciences and Mathematics breadth requirement.

**Major Requirements**

1. Neuroscience Core (65-70 units; satisfies the Life Sciences Core required for some majors in the College of Natural and Agricultural Sciences). Up to 12 units of upper-division life sciences courses (for this major; courses from the departments of Biochemistry, Biology, Entomology, and Neurosciences) not being used to satisfy the core may be taken prior to completion of the core requirement. Permission from the program chair or the program chair's designee is required to take upper-division units in excess of these 12 units.
   a) BIOL 005A, BIOL 005B, BIOL 005C (or BIOL 004 and BIOL 005B with advisor's approval.)
   b) PSYC 011 or STAT 040 or STAT 100A or STAT 105
   c) MATH 009A (or MATH 09HA) and MATH 009B (or MATH 09HB)
   d) CHEM 011A (or CHEM 011B), CHEM 011B (or CHEM 011B), CHEM 0101C (or CHEM 0101C), CHEM 112A-CHEM 112B-CHEM 112C
   e) PHYS 002A, PHYS 002B, PHYS 002C, or PHYS 021A-PHYS 021B-PHYS 021C, or PHYS 040A, PHYS 040B, or PHYS 040C
   f) BCH 100 or BCH 110A

2. Upper-division requirements
   a) First Tier (13-14 units)
      1) NRSC 106
      2) NRSC 120/PSYC 120
      3) NRSC 120L/PSYC 120L or BIOL 176L
      4) NRSC 124/PSYC 124
b) Second Tier (at least 12 units for the B.A. or at least 20 units for the B.S.)
   BIOL 111, BIOL 176, BIOL 177; BIOL 176L or NRSC 120L/PSYC 120L (whichever was not used under First Tier above); NRSC 116, NRSC 125/PSYC 125, NRSC 126/PSYC 126, NRSC 127/PSYC 127, PSYC 129

   c) Third Tier (additional units to reach a total of 36 units for the B.A. or 52 units for the B.S.)
   Select from upper-division courses listed under Neuroscience Core, First Tier, or Second Tier above not used to satisfy those requirements, and the additional courses listed below. The combined number of units taken under First Tier, Second Tier, and Third Tier must total either 36 if the B.A. is sought or 52 if the B.S. is sought.
   BCH 102, BCH 110B, BCH 110C; BIOL 100/ENTM 100, BIOL 102, BIOL 105, BIOL 107A, BIOL 108, BIOL 109, BIOL 110, BIOL 151, BIOL 160, BIOL 161A, BIOL 161B; BIOL 162/ENTM 162; BIOL 167; BIOL 171; ENTM 173/BIOL 173; BIOL 175; BIOL 175L, BIOL 185P; CS 170; up to 9 units from NRSC 191, NRSC 194, NRSC 197 and/or NRSC 199; PHYS 139L; PSYC 130, PSYC 132, PSYC 134, HMDV 135/PSYC 135, ANTH 146/PSYC 146, HMDV 162/PSYC 162

Note: No courses other than those listed may be used in the major unless specifically approved by the program chair or the program chair's designee.

**Sample Program**

**Bachelor of Arts**

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<tr>
<td>CHEM 001A-CHEM 001B</td>
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<td>CHEM 001C</td>
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<td>ENGL 001A, ENGL 001B, ENGL 001C</td>
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<td>Humanities/Social Sciences</td>
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<tr>
<td>CHEM 112A-CHEM 112B</td>
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<td>BIOL 005C</td>
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<td>NRSC 106</td>
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<tr>
<td>Foreign Language 1, 2</td>
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<tr>
<td><strong>Total Units</strong></td>
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</table>
Curricula and Courses

1. First tier (13-14 units)

a) NRSC 106
b) NRSC 120/PSYC 120

c) NRSC 120L/PSYC 120L or BIOL 176L

d) NRSC 124/PSYC 124

2. Second Tier (6-7 units)

Select additional units from the list below so that the units from the First Tier combined with the units from the Second Tier equal at least 20:

BIOL 111, BIOL 176, BIOL 177; BIOL 176L or NRSC 120/NRSC 120L (whichever was not used under 1, above); NRSC 116, NRSC 125/PSYC 125, NRSC 126/PSYC 126, NRSC 127/PSYC 127, PSYC 129

Descriptions for all courses used in the Neuroscience major and minor may be found in the appropriate department section.

Teaching Credential

Teachers in the public schools in California must be certified by the State Commission on Teacher Credentialing. The credential requires an undergraduate major, baccalaureate degree, and completion of a graduate credential program such as that offered by the Graduate School of Education at UCR. The latter usually requires three quarters and includes education courses and supervised teaching.

Before admission and student teaching in a graduate credential program, the candidate must pass the California Basic Education Skills Test (CBEST) and demonstrate subject-matter proficiency in the fields which the candidate will teach. The candidate can demonstrate proficiency either by passing the commission's subject-matter assessment examination, or, preferably, by completion of a graduate program that is state-approved for teacher preparation.

UCR has an approved undergraduate program for Neuroscience majors who plan to get a Multiple Subjects Credential and teach in the elementary (K-6) grades. A breadth of course work is necessary in addition to the specified requirements for the major. Students are urged to start early, preferably as freshmen, selecting courses most helpful for this career.

UCR does not have a state-approved undergraduate program for Neuroscience majors who wish to teach at the secondary level. The Teaching Credential in Science, biology emphasis, is required for biology teachers, grades 7-12. Students who plan to get this credential must take the commission's subject-matter assessment examination and should make certain their academic program includes preparatory course work. This is more easily accomplished with a Biology rather than a Neuroscience major. The examination includes biology in depth and general science with introductory, college-level biology, chemistry, physics, and geoscience (geology, meteorology, oceanography, astronomy).

Further information about courses, requirements, and examinations can be obtained in orientation meetings, the Biological Sciences Undergraduate Advising Center (1001 Batchelor Hall North), and the Graduate School of Education (1215 Sproul Hall).

NRSC 106. Introduction to Neuroscience. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 005A, BIOL 005B, CHEM 001A-CHEM 001B-CHEM 001C; or consent of instructor. An introduction to cellular, organismal, and behavioral neuroscience for science majors. Topics include structure and function of the brain, neurons, and synapses; sensory systems and perception; control of movement; neurobiology of hormones and sexual behavior; biorhythms, learning, memory, and psychoses.

Lecture, three hours; discussion, one hour. Prerequisite(s): NRSC 106 or consent of instructor. Examination of structures comprising nervous systems and the functional principles around which these structures are organized. Topics range from whole brain anatomy to the cellular units (neurons and glia) that constitute nervous systems, and to subcellular elements important in neural functioning.

NRSC 120. Cellular Neuroscience: Membrane and Synaptic Phenomena. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): NRSC 106 or consent of instructor. Examination of cellular and molecular mechanisms of nervous system function using concepts drawn from the study of vertebrates and invertebrates with emphasis on mammalian systems. Cross-listed with PSYC 120.

NRSC 120L. Neuroscience Laboratory. (2)
Lecture, one hour; laboratory, three hours. Prerequisite(s): NRSC 120/PSYC 120 or concurrent enrollment. Laboratory experiments using electrophysiological, chemical, and anatomical research methods fundamental to understanding neurons and neural systems. Cross-listed with PSYC 120L.

NRSC 124. Systems Neuroscience. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): NRSC 106 or consent of instructor. Study of the structure and function of motor, sensory, and motivational systems in vertebrate and invertebrate nervous systems. Cross-listed with PSYC 124.

NRSC 125. Neuroparmacology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): NRSC 120/PSYC 120; previous or concurrent enrollment in NRSC 120L/PSYC 120L and NRSC 124/PSYC 124 recommended. Examines synaptic neurotransmitter systems, mechanisms, and pharmacological agents and effects, which are fundamental to neural information processing. Cross-listed with PSYC 125.

NRSC 126. Neurobiology of Learning and Memory. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): NRSC 120/PSYC 120 or consent of instructor. Covers recent research and advances in the understanding of the physiological, anatomical, and biochemical basis of information acquisition and retention in nonhuman and human brain. Cross-listed with PSYC 126.

300 / Curricula and Courses
NRSC 127. Behavioral Control Systems. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): NRSC 120/PSYC 120. Students with a background in psychology or neuroscience are strongly recommended. An analysis of the principles of nervous system operation from the processing of sensory inputs for object recognition and localization to the organization of central patterns for generation of sequenced motor output. Cross-listed with PSYC 127.

NRSC 128. Immunology. (3)
Lecture, three hours; Prerequisite(s): BIOL 005A, BIOL 005B, CHEM 001C, CHEM 011C, CHEM 011C, CHEM 011C, CHEM 011C, MATH 09B or MATH 09B, PHYS 002C, PHYS 021C, PHYS 021C, BIOL 100 or BIOL 110A, one course in statistics. A study of humoral and cellular immunology. Topics include lymphoid systems, cells, antigens, antibodies, antibody formation, cellular immunity, and tumor and transplantation immunology. Diseases and altered immune states associated with each topic are discussed in detail. Cross-listed with BIOL 128.

NRSC 169. Human Embryology. (4)
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, CHEM 001C or CHEM 011C, CHEM 011C, MATH 09B or MATH 09B, PHYS 002C, PHYS 021C, BIOL 110A, STAT 105, third-year standing in the Biomedical Sciences Program; or consent of instructor. An in-depth study of normal human development from conception through the early postnatal period. Demonstrations use microscopic and other materials specifically adapted for the course. Some consideration is given to abnormal development.

NRSC 191. Seminar in Neuroscience. (3)
Seminar, three hours. Prerequisite(s): NRSC 120/PSYC 120 and one other upper-division Neuroscience course, or consent of instructor; upper-division standing. Lectures by the instructor and oral presentations by students on selected topics with emphasis on current research in neuroscience. Instructor and the topic vary. Written assignment. Course is repeatable to a maximum of 4 units.

NRSC 194. Independent Reading. (1-2)
Individual study, three to six hours. Prerequisite(s): consent of instructor; individual reading under faculty direction. Course is repeatable to a maximum of 4 units.

NRSC 197. Research for Undergraduates. (1-4)
Outside research, three to twelve hours. Prerequisite(s): NRSC 120/PSYC 120 or (concurrent enrollment); consent of instructor. An introduction to laboratory research under the supervision of a faculty member. Course is repeatable.

NRSC 199. Senior Research. (1-4)
Outside research, three to twelve hours. Prerequisite(s): open to seniors by invitation of faculty; NRSC 120/PSYC 120. Original research undertaken under the direction of a faculty member. Course is repeatable.

NEUROSCIENCE GRADUATE PROGRAM
Subject abbreviation: NRSC

Glenn I. Hatton, Ph.D., Director
Program Office, 1151 Batchelor Hall
(909) 787-5913

http://cnas.ucr.edu/~neuro/grain.htm

Furthermore, the three chief levels of analysis at which nervous systems are currently studied (molecular/cellular, systems, and behavioral) are more or less evenly represented by the interests and expertise of the faculty. Some faculty as may be expected, carry out research programs that combine two or more of these levels of analysis. These levels of analysis, which characterize the faculty's research, indicate the breadth of integrated neuroscience at UCR but do not represent "fields of emphasis" in which students are to be trained. Areas of expertise of the current faculty are as follows.

- Physiological actions of ion channel toxins
- Modulation of ion channels by neurotransmitters and hormones
- Synaptic transmission and neural plasticity in mammalian nervous systems
- Signal transduction in excitable cells
- Ionic interrelationships and the process of excitosis
- Molecular biology of ion channel structure and function
- Receptor-channel interactions
- Function of ligand-gated ion channels in neurons
- Influence of specific receptor proteins on function
- Synaptic and non-synaptic mechanisms in neuroendocrine systems
- Plasticity in adult central nervous system
- Molecular mechanisms of neuronal development
- Development of chemical sensors for real-time measurement of chemical dynamics in brain
- Synaptic and cellular mechanisms of sensory motor processing in the spinal cord
- Sensory-motor control in mammalian auditory and vocal systems and in related systems
- Neural control of eating behaviors
- Neural basis of language and reading
- Cerebral hemisphere asymmetries and hemispheric interaction
- Neurolinguistics
- Computational models of high-dimensional memory

Applications must meet the general admissions requirements of the Riverside Division of the Academic Senate and the UCR Graduate Council as set forth in the UCR General Catalog, including completion of an undergraduate degree (B.S. or B.A.). Applicants should have an adequate background in biological and physical sciences, ideally including courses in the following or equivalent areas: General Biology, Genetics, General Chemistry, Organic Chemistry, Physics, Calculus, and Statistics. Additionally, at least 20 quarter-units of courses distributed among the following areas are required, although applicants may be admitted with limited course work deficiencies and required to make up deficiencies as specified by the Admissions Committee:
- Biochemistry, Cell Biology, Molecular Biology, Physiology, Behavioral Biology, Learning and Memory, Perception, Computer Science; and
Neuroscience, Neurobiology, or Physiological Psychology, with laboratory.

**Doctoral Degree**

Core requirements include:

1. **NRSC 200A-NRSC 200B-NRSC 200C/PSYC 200A-PSYC 200B-PSYC 200C**
2. One Research Methods course selected from CHEM 125, CHEM 221A, CHEM 221B, CHEM 221C, CHEM 221D, NRSC 211, PSYC 211, PHYS 139.
3. Two courses or one course sequence selected from the following: BCH 110A-BCH 110B-BCH 110C, BCH 241/CHEM 241, BIOL 177, BIOL 200A-BIOL 200B, BIOL 203, BMSC 210A-BMSC 210B, BMSC 220, ENTM 206 and ENTM 206L, PSYC 203A, PSYC 203B, PSYC 203C

The course option most appropriate to the student's career goals is determined by the student in consultation with his/her guidance committee.

4. During each quarter in academic residence every student enrolls and participates in the Colloquium in Neuroscience (NRSC 257 or NRSC 287), and, until passing the oral qualifying examination, every student must complete at least two seminars, Special Topics in Neuroscience (NRSC 289, 2 units), during each year of academic residence. One seminar per year is required after the qualifying examination is passed.
5. After completing the course requirements and no later than the ninth quarter in residence, the student is given a two-part qualifying examination, one written and one oral.
6. Regardless of whether financial support comes from fellowships or research assistantships, etc., students are required to be teaching assistants for at least two quarters in Neuroscience or related-area courses, such as those taught by their mentors.
7. Within three months of advancement to candidacy, the student will be required to submit a written dissertation proposal to the Dissertation Committee for comments and approval. Before the dissertation is given final approval, the student must present a public lecture on the dissertation research to faculty and students in the program. Following the public lecture, the student meets with the Dissertation Committee for an oral defense in accordance with the regulations of the Graduate Division.

The normative time to the Ph.D. degree is 16 quarters.

**GRADUATE COURSES**

**NRSC 200A-NRSC 200B-NRSC 200C. Fundamentals of Neuroscience. (3-3-3)**

Lecture, three hours. Prerequisite(s): graduate standing or consent of instructor; NRSC 200A/PSYC 200A for 200B; NRSC 200B/PSYC 200B for 200C. The fundamentals of neuroscience in the areas of molecular and cellular mechanisms, neural and hormonal systems, and neural control of behavior. Cross-listed with PSYC 200A/PSYC 200B/PSYC 200C.

**NRSC 211. Selected Techniques in Microscopy. (5)**

Lecture, three hours; laboratory, six hours. Prerequisite(s): BIOL 111; second-year standing in a graduate program recommended. Concerned with the experimental analysis of cells and cellular components. Introduces the principles of light and transmission electron microscopy with applications to cell biology. Emphasizes sample preparation and the use of electron microscopy, but also illustrates the use of other kinds of microscopy. Laboratory work includes projects and techniques of special interest to the student.

**NRSC 257. Graduate Seminar in Cell, Molecular, and Developmental Biology. (1)**

Seminar, one hour. Prerequisite(s): graduate standing. Lectures by visiting scholars on current research in cell, molecular, and developmental biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 257, BIOL 257, BMSC 257, BFSC 257, ENTM 257, ENTX 257, NEM 257, and PPLA 257.

**NRSC 287. Colloquium in Neuroscience. (1)**

Colloquium, one hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports on current research topics in neuroscience with presentations by visiting scholars, faculty, and students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 287, BIOL 287, BMSC 287, BFSC 287, CHEM 287, and PSYC 287.

**NRSC 289. Special Topics in Neuroscience. (2)**

Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) vary each time course is offered. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 289, BIOL 289, BMSC 289, CHEM 289, ENTM 289, and PSYC 289.

**NRSC 290. Directed Studies. (1-6)**

Individual study, three to eighteen hours. Prerequisite(s): graduate standing; consent of instructor. Individual study directed by a faculty member, of specially selected topics in neuroscience. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**NRSC 297. Directed Research. (1-6)**

Outside research, three to eighteen hours. Prerequisite(s): graduate standing; consent of instructor. Research and experimental studies conducted under the supervision of a faculty member on specially selected topics in neuroscience. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**NRSC 299. Research for the Thesis or Dissertation. (1-12)**

Outside research, three to thirty-six hours. Prerequisite(s): graduate standing; consent of instructor. Original research in an area selected for the advanced degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

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The M.S. program in Pest Management is not currently accepting new students. Address inquiries to the Department of Entomology, 1151 Batchelor Hall, or call (800) 735-0717 or (909) 787-5621.

**PHILOSOPHY**

Subject abbreviation: PHIL

Andrews Reath, Ph.D., Chair
Department Office, 1604 Humanities and Social Sciences; (909) 787-5208

http://www.ucr.edu/philosophy/phil.html

**Professors**

Carl F. Cranor, Ph.D.
John M. Fischer, Ph.D.
David K. Giddens, Ph.D.
Bernd Magnus, Ph.D.
Andrew Reath, Ph.D.
Georgia Warnke, Ph.D.
Gary Watson, Ph.D.
Howard K. Wettstein, Ph.D.
Larry Wright, Ph.D.

**Professor Emeriti**

David Harrah, Ph.D.

**Associate Professors**

Paul D. Hoffman, Ph.D.
Pierre Keller, Ph.D.

**Assistant Professors**

Eric Beck, Ph.D.
Eric Schwitzgebel, Ph.D.

**MAJORS**

The department of Philosophy offers a major and minor in Philosophy and a major in Philosophy/Law and Society.

The major in Philosophy is designed to introduce students to the important issues and arguments surrounding such subjects as morality, knowledge, the nature of the mind and of the physical world, science, and language. The program provides a rigorous background in the history of Western philosophy, and studies contemporary approaches (both analytic and Continental) to philosophical issues. The B.A. degree in Philosophy prepares students for graduate study in philosophy, and is also excellent preparation for law school. For students interested in a double major, philosophy also serves as an excellent complement to psychology, mathematics, political science, and the natural sciences.

The B.A. degree in Philosophy/Law and Society offers students a means of understanding complex relationships between social institutions and provides a strong basis for graduate studies in areas related to law and philosophy. The
The Philosophy/Law and Society curriculum is designed to provide students with a strong background in law and philosophy.

**Degree Requirements**

**University Requirements**

See the Undergraduate Studies section for requirements that all students must satisfy.

**College Requirements**

See Degree Requirements College of Humanities, Arts, and Social Sciences in the Undergraduate Studies Section, for requirements that students must satisfy.

**Major Requirements**

The department offers two majors: the traditional Philosophy major, and a Philosophy/Law and Society major.

**Philosophy Major**

The major requirements for the B.A. degree in Philosophy are as follows:

Fifty-two (52) units of course work in Philosophy including at least 36 upper-division units.

1. PHIL 007 or PHIL 007H and PHIL 008 or PHIL 008H

2. Four courses in the history of philosophy with at least one from each of the areas below (Select courses from PHIL 030 (E-Z), PHIL 120 (E-Z), PHIL 121 (E-Z); a specific list is provided by the Philosophy Department. Not more than two courses may be from PHIL 030 (E-Z).
   - a) Ancient Philosophy
   - b) Medieval to Early Modern Philosophy
   - c) Late Modern to Nineteenth-Century Philosophy

3. At least one course in each of the following areas:
   - a) Epistemology: PHIL 130 through PHIL 143
   - b) Metaphysics: PHIL 151 through PHIL 169
   - c) Moral and Political Philosophy: PHIL 116/BSAD 116, PHIL 117, and PHIL 171 through PHIL 189 (E-Z)

The department has its own undergraduate advisor, and students are urged to consult the advisor in preparing their course of study each quarter while at UCR.

**Philosophy/Law and Society Major**

Major requirements for a B.A. degree in Philosophy/Law and Society are as follows:

1. Philosophy Department requirements (36 units)
   - a) PHIL 007 or PHIL 007H
   - b) Three courses in the history of philosophy (two of which must be upper-division): PHIL 030 (E-Z), PHIL 120 (E-Z), PHIL 121 (E-Z)
   - c) Five courses in moral and political philosophy: PHIL 116/BSAD 116, PHIL 117, and PHIL 171 through PHIL 189 (E-Z)

2. Requirements for Law and Society (36 units)
   - a) PHIL 007 or PHIL 007H
   - b) LWSO 100
   - c) One course chosen from the following list: ECON 111, PSYC 012, SOC 110A, POSC 114 (or equivalent course in research methods)
   - d) Five courses chosen from the following list: ANTH 127, ECON 119, HISE 153, PHIL 183, POSC 167, SOC 159 (One of these courses may be replaced by a substitute choice from a list of courses published annually by the Law and Society Faculty Committee. Not more than two of the courses taken to meet this requirement [2.d] may be from the same department.)
   - e) LWSO 193, Senior Seminar

Note: In filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements (Philosophy Department requirements and Law and Society requirements). The department has its own Philosophy/Law and Society undergraduate advisor, and each student is urged to consult the advisor in preparing a course of study each quarter while at UCR.

**Minor**

A student may minor (20 units) in Philosophy by taking either PHIL 007 or PHIL 007H, or PHIL 008 or PHIL 008H, and four upper-division philosophy courses.

Students may also choose to do a Philosophy minor with special emphasis, taking their four upper-division courses from one of the areas listed below:

1. Philosophy, Literature, and History of Philosophy: PHIL 120 (E-Z), PHIL 121 (E-Z), PHIL 152, PHIL 157, PHIL 162, PHIL 163, PHIL 164

2. Philosophy and Cognitive Science: PHIL 125, PHIL 126, PHIL 130, PHIL 131, PHIL 151, PHIL 152, PHIL 153

3. Philosophy and the Natural Sciences: PHIL 117, PHIL 130, PHIL 139, PHIL 143, PHIL 151, PHIL 153, PHIL 169, PHIL 188

4. Philosophy and Social and Policy Analysis: PHIL 171, PHIL 174, PHIL 175, PHIL 176, PHIL 177, PHIL 183, PHIL 185

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

**GRADUATE PROGRAM**

Domestic applicants to these graduate programs must supply Graduate Record Examination scores for the aptitude tests. All applicants must submit a writing sample.

**Master’s Degree**

The master’s program in Philosophy follows Plan I. Upon admission to the program, students are assigned a committee of three advisors. Students consult with the Graduate Advisor and their advisory committees twice a year in September and January to determine their individual courses of study. In addition, all students must have their programs signed by the Graduate Advisor.

Students should note although they need not have completed distributional requirements or a language requirement in order to acquire the M.A. degree, there are strict distributional and language requirements for the Ph.D. degree. M.A. students who expect to go on in the Ph.D. program must begin to fulfill these requirements immediately upon entering the program if they expect to acquire the Ph.D. degree within the prescribed period of time.

In addition, students must:

1. Complete satisfactorily, course work totaling 48 units of graduate credit in philosophy. Of these:
   - a) Twelve (12) units must be in the three proseminars for first-year graduate students. (The proseminars are designed to acquaint first-year students with the current state of discussion in a given sub-field and also to equip them with the elementary tools needed to conduct their own research.)
   - b) Up to twenty (20) units may be in the 100 series courses depending on the student’s interests and background.

These are to be chosen only in consultation with the student’s advisory committee and the Graduate Advisor.

2. Satisfy the logic M.A. requirements. Students must take PHIL 124 (Formal Logic) before the end of their sixth quarter and pass it with a grade of “B” or better. Students who fail to pass on the first try...
have a second, and final, opportunity to take PHIL 124.

Since some entering graduate students may have a background in logic beyond the introductory level, the department offers an examination to the entering class on the day before the beginning of fall quarter (if classes start on a Monday, the exam is offered the previous Friday). For those students who perform satisfactorily on the test, the requirement for the M.A. is considered fulfilled. Students who are unsure about the adequacy of their background are encouraged to take the test for diagnostic purposes. Those who wish to take the test but are unable to attend should contact the Graduate Advisor prior to the date of the exam.

3. Submit a "professional paper" of 25 pages or less (normally a high-quality seminar paper) for oral examination and approval. Further information on what constitutes a professional paper is available from the Graduate Advisor. Students must consult with the Graduate Advisor in selecting an M.A. committee. Failure after two opportunities to pass the M.A. oral constitute grounds for dismissal from the program. In addition, completion of the M.A. requirements does not guarantee admission to the Ph.D. program.

Doctoral Degree

Students are invited to continue toward candidacy for the Ph.D. degree on the basis of performance in courses and seminars, satisfactory completion of the M.A. requirements, and the recommendation of their advisory committee in consultation with the Graduate Advisor. A student's course of study is supervised by an advisory committee, in consultation with the Graduate Advisor until the student receives a dissertation committee. Under certain circumstances, holders of the Master's degree in Philosophy from other universities may be admitted to the doctoral program. These students are required to enroll in first-year seminars.

Course Requirements. Ph.D. students are required to complete 12 more units in philosophy in addition to the 48 units for the M.A. degree. Of the student's 60 graduate units in philosophy, 8 units in addition to the seminars must be in the area of the history of philosophy, with 4 of these in ancient philosophy, 8 in addition to the seminar in the area of metaphysics and epistemology, and 8 in addition to the seminar in the area of ethics, politics, and aesthetics.

Language Requirement. A student must know one foreign language well enough to conduct philosophical research in that language.

Students may select Greek, Latin, French, German, or (by petition) some other language if it accords better with the area of their research. Competence is judged by a translation exam administered by the department.

Logic Requirement. In order to satisfy the logic requirement at the Ph.D. level, students must pass PHIL 125 (Intermediate Logic) with a grade of "B" or better.

Proposition Requirement. Having acquired an M.A. degree either here or at another institution, all Ph.D. students must complete an acceptable proposition by the end of their first year in the Ph.D. program. A proposition is a paper, no more than forty pages in length, devoted to a significant problem in philosophy.

Qualifying Examination. Students must write a dissertation prospectus and pass a qualifying oral examination before advancing to candidacy. This examination, which is supervised by a faculty committee as stipulated in the regulations of the Graduate Division, concentrates on the students' preparation for writing a dissertation as indicated by the dissertation prospectus. It must be taken after the student has passed the M.A. Language and Proposition requirements and normally occurs within two quarters of the completion of these requirements.

Dissertation. A dissertation to be presented as prescribed by the Graduate Council is prepared under the direction of the candidate's dissertation committee.

Final Examination. After completion of the dissertation, the candidate is examined in its defense by the dissertation committee.

The normative time to the Ph.D. degree is 18 quarters.

Lower-Division Courses

PHIL 001. Introduction to Philosophy. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introductory exploration into the nature of the individual, his/her place in the universe, and the forces that shape his/her destiny. Credit is awarded for only one of PHIL 001 or PHIL 001H.

PHIL 001H. Honors Introduction to Philosophy. (4)
Lecture, two hours; discussion, one hour; extra reading, three hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 001. An introductory course designed to explore a small number of classical texts central to philosophy and the liberal arts and sciences. Students examine issues surrounding the nature of knowledge, the foundations of moral philosophy and the relation of both to the development of the human and natural sciences. Texts may vary from year to year and include works by such authors as Plato, Aristotle, Descartes, Hobbes, Hume, and Kant. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of PHIL 001 or PHIL 001H.

PHIL 002. Contemporary Moral Issues. (4)
Lecture, two hours; discussion, one hour; consultation, one hour. Prerequisite(s): none. Philosophical analysis of contemporary moral issues such as abortion, discrimination, sexual morality, punishment, the obligation to obey the law, suicide, euthanasia, war, privacy. Credit is awarded for one of PHIL 002 or PHIL 002H.

PHIL 002H. Honors Contemporary Moral Issues. (4)
Lecture, two hours; discussion, one hour; extra reading, three hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 002. Philosophical analysis of contemporary moral issues such as abortion, discrimination, sexual morality, punishment, the obligation to obey the law, suicide, euthanasia, war, and privacy. Satisfactory (S) or No Credit (NC) grading is not available. Credit is only awarded for one of PHIL 002 or PHIL 002H.

PHIL 007. Introduction to Critical Thinking. (4)
Lecture, two hours; discussion, one hour. Prerequisite(s): none. A practical examination of reasoning and argument typically illustrated. Credit is awarded for only one of PHIL 007 or PHIL 007H.

PHIL 007H. Honors Introduction to Critical Thinking. (4)
Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 007. A practical examination of reasoning and argument, typically illustrated. Satisfactory (S) or No Credit (NC) grading is not available. Credit is only awarded for one of PHIL 007 or PHIL 007H.

PHIL 008. Introduction to Logic. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to symbolic logic. Teaches how to distinguish, in a precise way, valid deductive arguments from those that are invalid; includes learning to use logical symbolism, truth tables, and formal deductions. Credit is awarded for only one of PHIL 008 or PHIL 008H.

PHIL 008H. Honors Introduction to Logic. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to PHIL 008. An introduction to symbolic logic. Teaches how to distinguish, in a precise way, valid deductive arguments from those that are invalid; includes learning to use logical symbolism, truth tables, and formal deductions. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of PHIL 008 or PHIL 008H.

PHIL 011. Introductory Philosophy Seminar. (4)
Seminar, three hours; extra reading, two hours; one term paper. Prerequisite(s): none. An introduction to a small number of central philosophical problems. Small class size in order to provide for substantial discussion and close supervision of written papers.

PHIL 012. Introductory Seminar in Moral Philosophy. (4)
Seminar, three hours; extra reading, two hours; one term paper. Prerequisite(s): none. An introduction to a small number of central moral issues. Small class size in order to provide for substantial discussion and close supervision of written papers.
PHIL 107. Markets and Morals. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. A study of socialist, liberal, libertarian, and communitarian approaches to the problem of the compatibility of markets and morals. Also considers issues such as the meaning of freedom, community consumption, prostitution, surrogate mothering, and the distribution of health care.

PHIL 108. Philosophical Issues of Race and Gender. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates philosophical issues concerning race and gender. Themes include the role of cultural and biological criteria in defining these concepts; the roles of race and gender in personal identity; the nature of racism, sexism, and their variants; and policy implications such as affirmative action and the civil status of homosexual relationships. Cross-listed with WMST 108.

PHIL 109. Human Rights and Asian Values. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines issues on this topic; that is, the ways in which various conceptions of the human being—its possibility, criteria, scope, and limitations—are considered. Cross-listed with BSAD 116.

PHIL 110. Asian Philosophy. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A general introduction to philosophy as well as a survey of Asian contributions to philosophy, focusing on the Indian and Chinese traditions. Examines questions concerning how best to live one’s life, what can be known, the relation between mind and body, whether there are minds and bodies, and the nature of the universe.

PHIL 111 (E-Z). Philosophy, Film, and Reflective Popular Culture. (4)
Lecture, three hours; outside reading, two hours; screening, one hour. Prerequisite(s): upper-division standing or consent of instructor. Examines philosophically a different specific theme as depicted in "popular" films. Four or five films are screened, each is examined for the philosophical issues it raises and how these often stereotypical treatments change over time. E. The Holocaust; F. The Physically and Psychologically Challenged; R. Racism in America; H. Feminism; I. "Romantic" Love.

PHIL 112 (E-Z). Major Philosophers. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. Additional prerequisites are required for some segments of this course; see Department. Each segment covers a major figure in the history of philosophy.

PHIL 113. God. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing. Topics include examination of the nature of divinity and the nature of evil, the influence of the concept of God upon philosophical history, ideals, values, and the riddle of the after-life.

PHIL 114. Science and Human Understanding. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. A study of some recent philosophical reflections on this topic, that is, the ways in which various contemporary philosophers have examined human understanding as exemplified in science.

PHIL 115. The Care of the Soul. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the role of the human spirit in the face of other philosophical efforts to demythologize the soul into neural functions or even mere congeries of atoms in motion in the void.

PHIL 116. Business Ethics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. An inquiry into some of the moral issues arising from business life, such as conflicts of interest, responsibility to consumers, corporate culture and character, and the morality of competition. The history of ethics and the history of business as an institution are also considered. Cross-listed with BUAD 116.

PHIL 117. Environmental Ethics. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. A philosophical consideration of ethical problems that arise from the use and exploitation of the environment. Topics covered include workplace pollution hazards; environmental pollution and protection of collective natural resources; the rights of future generations; the rights of animals; the protection of endangered species.

PHIL 118. Personhood and Personal Identity. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A historical and contemporary examination of the nature of the universe. Topics include Q. Ancient Philosophy; R. Medieval Philosophy; S. Early Modern Philosophy; T. Seventeenth-Century Philosophy; V. French Renaissance Philosophy; W. Political Philosophy; X. Moral Theories of Hume and Kant; Y. Kant and Post-Kantian European Moral Philosophy. PHIL 121 is repeatable to a maximum of 8 units.

PHIL 119. Economics and Philosophy. (4)
Lecture, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): PHIL 008 or consent of instructor. An introduction to first-order logic, that is, the core of the logic often used in contemporary philosophy, mathematics, and computer science; supplemented with an introduction to some elementary set-theory.

PHIL 120. Formal Logic. (4)
Lecture, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): PHIL 124 or consent of instructor. The basic metatheory of first-order logic; with an emphasis on the precise relation between its syntax (formulas, rules of inference, and proofs) and semantics (interpretations, truth, validity), leading to the soundness and completeness theorems.

PHIL 121. Intermediate Logic. (4)
Lecture, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): PHIL 125. Advanced metatheory of first-order logic, leading to a discussion of some of the important incompleteness, undecidability and non-expressability results of twentieth-century logic (Godel, Church, Turing, etc.).

PHIL 122. Topics in Formal Logic. (4)
Lecture, three hours; reading and logic exercises, three hours. Prerequisite(s): PHIL 124 or consent of instructor. An examination of some standard topics in formal logic. Course content varies from year to year. Typical topics are Godel’s Theorems (for first- and second-order logic), Turing Machines and Church’s Thesis, results in set theory, model theory, modal logic, inductive logic, and the history of logic. Course is repeatable to a maximum of 12 units.

PHIL 123. Political Philosophy. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. An inquiry into the nature of human knowledge—its possibility, criteria, scope, and limitations.

PHIL 124. Twentieth-Century Analytic Philosophy. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. A discussion of some major issues and thinkers in the tradition dominant in twentieth-century British and American philosophy. Philosophers discussed might include Frege, Russell, Carnap, Quine, Kripke, and D. Lewis.

PHIL 125. Magic, Medicine, and Science. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the history of Western science and medicine from the Greeks to the Newtonian synthesis. Examines the development of modern science as the synthesis of organic, magical, and mechanical systems of thought, and the ideas of the philosophers who subscribed to them.

PHIL 126. Reasoning and Rationality. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): PHIL 007 or consent of instructor. An exploration of the role reasoning plays in our lives, including a study of the linguistic and conceptual issues encountered.
when everyday reasoning becomes abstract, and reflections on the related philosophical notion of rationality.

PHIL 139. Philosophy of Science. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. Topics discussed include understanding scientific objectivity in the light of history and sociology of science, realism and anti-realism about scientific theories; scientific methodology and its logic; and the nature of scientific explanation.

PHIL 143. Philosophy of Biological Sciences. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. A philosophical examination of questions surrounding biological theory. Topics include sociobiology and the impact of genetics research on society; reductionism, the critical comparison of natural selection with other evolutionary mechanisms, the analysis of teleology and the nature of biological species.

PHIL 151. Metaphysics. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor: An investigation of some of the traditional problems in Western philosophy that have been labeled metaphysical, such as the existence of God, the relationship between mind and body, the determinism versus free will debate, and the nature of time and space.

PHIL 152. Philosophy of Language. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor: A study of some of the traditional issues in the philosophy of language, such as analyticity, theories of reference, truth, speech act theory, and philosophical theories of formal grammars.

PHIL 153. Philosophy of Mind. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. A study of several theories of the nature of mind and an analysis of particular issues occasioned by them: the mind-body problem, personal identity, emotions, human action, self-knowledge, knowledge of other minds, and explanations of human behavior.

PHIL 154. Philosophy of Psychology. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or upper-division standing or consent of instructor. Discussion of selected topics in the philosophy of logic and mathematics such as: the nature of logical laws and logical inference; logic and modal notions; logical and semantic paradoxes; the role of metaphysics; the relationship of mathematics to logic; mathematical knowledge and truth; and the infinite. Course is repeatable as content changes.

PHIL 155. Philosophy of Logic and Mathematics. (4) Lecture, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): PHIL 124 or consent of instructor. A discussion of selected topics in the philosophy of logic and mathematics such as: the nature of logical laws and logical inference; logic and modal notions; logical and semantic paradoxes; the role of formal systems; the relationship of mathematics to logic; mathematical knowledge and truth; and the infinite. Course is repeatable as content changes.

PHIL 156. Philosophy of Logic and Mathematics. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the topics of the lecture course. A discussion of selected topics in the philosophy of logic and mathematics such as: the nature of logical laws and logical inference; logic and modal notions; logical and semantic paradoxes; the role of formal systems; the relationship of mathematics to logic; mathematical knowledge and truth; and the infinite. Course is repeatable as content changes.

PHIL 157. Existentialism. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or upper-division standing in Philosophy or consent of instructor. A study of existentialist philosophy and the development of the existentialist movement. Topics include the relationship between mind and body, the determinism versus free will debate, and the nature of time and space.

PHIL 158. Existentialism. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. A study of the topics of the lecture course. A discussion of selected topics in the philosophy of logic and mathematics such as: the nature of logical laws and logical inference; logic and modal notions; logical and semantic paradoxes; the role of formal systems; the relationship of mathematics to logic; mathematical knowledge and truth; and the infinite. Course is repeatable as content changes.

PHIL 159. Topics in Metaphysics. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. A study of contemporary metaphysics, such as abstract objects; essentialism and identity; laws of nature; free will and determinism. Course is repeatable as content changes.

PHIL 160. Topics in Metaphysics. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of contemporary metaphysics, such as abstract objects; essentialism and identity; laws of nature; free will and determinism. Course is repeatable as content changes.

PHIL 161. The Individual and Society: Introduction to Ethical Theory. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to ethical theory and the nature of ethical judgments. Topics include moral reasoning, moral intuitionism, moral realism, moral anti-realism, moral relativism, and ethical pluralism.

PHIL 162. Twentieth-Century Continental Philosophy. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor: An introduction to the major philosophical movements of the twentieth century, including phenomenology, existentialism, structuralism, deconstruction, and critical theory. Authors discussed include Heidegger, Gadamer, Habermas, Derrida, and Foucault.

PHIL 163. Philosophy in Literature. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): PHIL 007 or PHIL 008 and PHIL 001 or PHIL 002 or consent of instructor. A study of philosophical issues raised by selected novelists, poets, and playwrights.

PHIL 164. Philosophy of Religion. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A historical, critical examination of the concepts and arguments involved in the Judeo-Christian God-concept and the influence of this world view upon the ideas and values of the Western world.

PHIL 165. Philosophy of Logic and Mathematics. (4) Lecture, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): PHIL 124 or consent of instructor. A discussion of selected topics in the philosophy of logic and mathematics such as: the nature of logical laws and logical inference; logic and modal notions; logical and semantic paradoxes; the role of formal systems; the relationship of mathematics to logic; mathematical knowledge and truth; and the infinite. Course is repeatable as content changes.

PHIL 166. Philosophy of Logic and Mathematics. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of contemporary metaphysics, such as abstract objects; essentialism and identity; laws of nature; free will and determinism. Course is repeatable as content changes.

PHIL 167. Space, Time, and Spacetime. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the relationships between individuals and the nature of values, such as the nature and justification of ethical beliefs.

PHIL 168. Biomedical Ethics. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. An examination of issues in the philosophy of medicine, such as ethical issues in medical research, the ethics of patient care, and the ethics of medical technology.

PHIL 169. Topics in Value Theory. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor. A study of contemporary ethical theories, such as utilitarianism, deontology, and virtue ethics.

PHIL 170. Special Studies. (3-5) To be taken with the consent of the department Chair as a means of meeting special curricular problems. Course is repeatable to a maximum of 16 units.

PHIL 171. Ethics. (4) Seminar; three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor: A study of the major classical moral philosophers in the Western tradition and of some of the problems of modern ethics.

PHIL 172. Political Philosophy. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor: An introduction to political philosophy, including theories of political authority, the nature of political obligation, and the theory of justice.

PHIL 173. Social Philosophy. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the major classical moral philosophers in the Western tradition and of some of the problems of modern ethics.

PHIL 174. Ethics. (4) Seminar; three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor: A study of the major classical moral philosophers in the Western tradition and of some of the problems of modern ethics.

PHIL 175. Social Philosophy. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the major classical moral philosophers in the Western tradition and of some of the problems of modern ethics.

PHIL 176. Political Philosophy. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor: An introduction to political philosophy, including theories of political authority, the nature of political obligation, and the theory of justice.

PHIL 177. Justice. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor: A philosophical analysis of the concept of justice.

PHIL 178. Philosophy of Feminism. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor: An analysis of current concepts and debates in feminist philosophy including gender equality, gender difference, and the relation of sex and gender. Situates various approaches to these topics in the history of philosophy.

PHIL 183. Philosophy of Law. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An inquiry into the nature of criminal law, the relation between law and morality, the nature of legal responsibility, and the obligation to obey the law.

PHIL 185. Marxist Critique. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the ideas central to the tradition of Western Marxism: ideology, critique, reification, instrumental reason, the domination of nature, and communicative action. Theorists discussed typically include Hegel, Marx, Lukacs, Adorno, Horkheimer, Benjamin, and Habermas.

PHIL 186. Political Philosophy. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor: A study of the major classical moral philosophers in the Western tradition and of some of the problems of modern ethics.

PHIL 187. Social Philosophy. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the major classical moral philosophers in the Western tradition and of some of the problems of modern ethics.

PHIL 188. Biomedical Ethics. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor: A study of contemporary ethical theories, such as utilitarianism, deontology, and virtue ethics.

PHIL 189 (E-Z). Topics in Value Theory. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or consent of instructor: A study of contemporary ethical theories, such as utilitarianism, deontology, and virtue ethics.

PHIL 190. Special Studies. (3-5) To be taken with the consent of the department Chair as a means of meeting special curricular problems. Course is repeatable to a maximum of 16 units.

PHIL 192. Junior Seminar. (4) Seminar; three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor: An examination of issues in the philosophy of medicine, such as ethical issues in medical research, the ethics of patient care, and the ethics of medical technology.
PHIL 250. Philosophy Colloquia. (1)
Prerequisite(s): graduate standing. Oral reports by visiting scholars on current research in philosophy and discussion with students and faculty. Does not count toward the unit requirement for the M.A. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 255A-PHIL 255B-PHIL 255C. Proseminar for First-Year Graduate Students. (4-4-4) Year
Seminar: three hours; extra reading: three hours. Prerequisite(s): for entering graduate students only. A three-term sequence designed to introduce new graduate students to current issues and methods of research in (a) the history of philosophy, (b) metaphysics and epistemology, and (c) moral philosophy.

PHIL 260. Seminar in Philosophical Problems. (4)
Seminar: three hours; outside research: three hours. Prerequisite(s): graduate standing or consent of instructor. Each quarter in which this course is offered is considered an important philosophical problem. Letter grades are assigned to students presenting formal seminars; other students are graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 265. Philosophical Texts. (1-4)
Seminar: one to three hours; consultation: one hour. Prerequisite(s): graduate standing. Focused reading and discussion of common texts on research topics in philosophy. Will count toward the unit requirement for the M.A. if taken on a letter-graded basis and a paper is produced; others will be graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 270. Seminar in Individual Philosophers. (4)
Seminar: three hours; outside research: three hours. Prerequisite(s): graduate standing or consent of instructor. Each quarter in which this course is offered is a major figure in the history of philosophy considered. Letter grades are assigned to students presenting formal seminars; other students are graded Satisfactory (S) or No Credit (NC).

PHIL 280. Seminar in Contemporary Philosophy. (4)
Seminar: three hours; outside research: three hours. Prerequisite(s): graduate standing or consent of instructor. Each quarter in which this course is offered is some aspect of contemporary philosophy is considered. Letter grades are assigned to students presenting formal seminars; other students are graded Satisfactory (S) or No Credit (NC).

PHIL 290. Directed Studies. (1-6)
Prerequisite(s): consent of instructor. Graded Satisfactory (S) or No Credit (NC), except Master's Degree students may be graded on an A-F basis. Course is repeatable.

PHIL 291. Individual Studies in Coordinated Areas. (2-4)
Prerequisite(s): graduate standing. A program of studies designed to advise and assist candidates who are preparing for the Comprehensive Examinations. Open to M.A. students only; does not count toward the unit requirement for the M.A. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 292. Concurrent Analytical Studies in Philosophy. (1-4)
Prerequisite(s): consent of instructor. Each 292 course will be taken concurrently with some 100-series course, approved by the Graduate Advisor, but on an individual basis. It will be devoted to completion of a graduate paper based on research or criticism related to the 100-series course. Faculty guides and evaluations will be provided throughout the quarter. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

PHIL 297. Directed Research. (1-6)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 299. Research for Thesis or Dissertation. (1-12)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 301. Directed Studies in the Teaching of Philosophy. (1)
Seminar: one hour. Prerequisite(s): graduate standing. A program of orientation, lectures, and workshops designed to enhance the Teaching Assistant's understanding of teaching methods in philosophy and to provide opportunities to work closely with experts in college teaching in order to improve the quality of instruction. Required of all new Teaching Assistants. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHIL 302. Teaching Practicum. (1-4) F, W, S
Prerequisite(s): employment as Teaching Assistant or Associate. Supervised teaching in lower-division courses and DWSO 100. Required of all teaching assistants in philosophy. Does not count toward the unit requirement for the M.A. degree. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

PHYSICAL EDUCATION

Subject abbreviation: PED

Andrew A. Rinne, M.A., Director
Department Office, 108 Physical Education
909 787-5432
http://www.ucr.edu/CHESS/depts/physed/PEHome.html

Supervisors Emeriti
Lawrence G. Allan, M.A.
Donald K. Edwards, P.E.D.
F Dwain Lewis, M.A.
Franklin A. Lindenburg, Ed.D.

Lecturers
Gary A. Dean, B.A.
Sue C. Gozansky, M.S.
James A. Huff, M.A.
Mark R. Moyer, M.A.
Edmond L. Ots, M.S.
Christopher A. Rinne, M.A.
Doug R. Smith, M.A.
Russell R. Smith, M.A.

The Department of Physical Education offers a wide range of activity classes intended to give students the skills and knowledge to embrace a lifestyle that includes physical activity. The Department also offers a survey class on the principles of healthful living, and certification classes in first aid, CPR, and lifeguard training, and aquatic instruction.

Intercollegiate Athletic Program
The intercollegiate athletic program provides the opportunity for UCR students to experience quality competition in the sports of men's basketball, baseball, track, cross country, and tennis, and in women's basketball, volleyball, track, cross country, tennis, and softball.

In April 1999, UCR declared its intent to move to Division I. The university is currently in Division I of the National Collegiate Athletic Association (NCAA) and will begin competition in the 2001-2002 academic year in the Big West Conference.

As part of the move to Division I, golf and soccer will be added for both men's and women's sports in the 2001-2002 academic year.

Individuals interested in the program should contact the coach or athletic director. Any of the above sports may be taken for credit.

Recreation and Intramural Sports for Men and Women
The intramural sports programs and the recreational program are both under the direction of the Recreation Coordinator in the Student Recreation Center.

LOWER-DIVISION COURSES

PED 001A-PED 001B-PED 001C. Physical Education (Activity). (1/2)
Activity, one and a half to two hours. Instruction in a variety of sports, martial arts, and exercise and conditioning activities. Graduate students must take the course on a Satisfactory (S) or No Credit (NC) basis. Courses are repeatable; however, a maximum of 6 units of any combination of PED 001A-PED 001B-PED 001C, PED 001D, and/or equivalent transfer credit may be applied toward the baccalaureate degree. Rinne in charge.

PED 001D. Physical Education (Activity). (1)
Activity, four to six hours. Intercollegiate sports. Course is repeatable; however, a maximum of 6 units of any combination of PED 001A-PED 001B-PED 001D, and/or equivalent transfer credit may be applied toward the baccalaureate degree. Graduate students must take the course on a Satisfactory (S) or No Credit (NC) basis. Rinne in charge.
The Physical Sciences major is not accepting new students at this time. For more information, contact the College of Natural and Agricultural Sciences, Student Affairs Office, 1140 Batchelor Hall, or call (909) 787-7294.

## PHYSICS

**Subject abbreviation:** PHYS

<table>
<thead>
<tr>
<th>Professors</th>
</tr>
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<tbody>
<tr>
<td>Allen D. Zych, Ph.D., Chair</td>
</tr>
<tr>
<td>Bipin R. Desai, Ph.D., Vice Chair</td>
</tr>
<tr>
<td>Department Office, 3047 Physics</td>
</tr>
<tr>
<td>(909) 787-5331; <a href="http://cnas.ucr.edu/~physics">http://cnas.ucr.edu/~physics</a></td>
</tr>
</tbody>
</table>

The department offers two degrees: the B.A. in Physics and the B.S. in Physics. The B.A. in Physics follows the liberal arts tradition with a broader coverage of the humanities and social sciences. It is selected often by students who intend to obtain a teaching credential with a specialty in science or to pursue a career combining business management opportunities with a knowledge in science and technology. The B.S. degree program is designed for students with a strong interest in the sciences who wish to emphasize this aspect of their education and training more extensively than is possible with the more traditional B.A. degree program. The B.S. degree provides a strong foundation for students who wish to continue on to graduate studies in physics.

The extensive course offerings and modern facilities within the Physics Department, coupled with close, personal counseling by faculty advisors, provide students with a physics program that is characterized by its breadth and flexibility.

### Career Opportunities

Graduates with a bachelor’s degree in Physics generally begin their careers in government or industry. Professions include technical research, development, quality assurance, testing, and sales in a variety of fields including semiconductor devices, integrated circuits, lasers, microwave devices, computers, communications, aerospace, medicine, materials sciences, and many engineering-related disciplines.

The federal government and national laboratories employ a large number of physicists. Agencies such as the Department of Energy, the State Department, and the Defense Department, and industries in communications, medical and scientific instruments, computers, audio equipment, telecommunications equipment, utilities, and petroleum producers also employ physicists.

The bachelor’s degree programs in the UCR Department of Physics are suited for continuing education in graduate schools or for preparation in other general technical, professional careers. Students with graduate training are employed by colleges or universities, national laboratories, industry, or governmental agencies.

### Degree Requirements

#### University Requirements

See the Undergraduate Studies Section for requirements that all students must satisfy.

#### College Requirements

See Degree Requirements, College of Natural and Agricultural Sciences in the Undergraduate Studies Section, for requirements that students must satisfy.

Some of the following requirements for the major may also fulfill some of the College’s breadth requirements. Consult with a department advisor for course planning.

### Major Requirements

The major requirements for the B.A. and the B.S. degrees in Physics are as follows:

1. Lower-division requirements (60 units)
   a) PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D, PHYS 040E
   b) MATH 009A-MATH 009B-MATH 009C, MATH 010A-MATH 010B, MATH 046
   c) CHEM 001A-CHEM 001B-CHEM 001C
2. Upper-division requirements (55 units)
a) PHYS 130A-PHYS 130B, PHYS 134, PHYS 135A-PHYS 135B, PHYS 136, PHYS 156A-PHYS 156B
b) PHYS 138L, PHYS 139L, PHYS 140L. An approved senior thesis (PHYS 195) in experimental physics or an internship (PHYS 198-I) in experimental physics at a government or industrial laboratory can be used in place of PHYS 140L
c) Three elective courses to be taken in consultation with a faculty advisor.

Specialized skills can be developed by taking physics electives from the following list:
- Astrophysics (PHYS 111)
- Solid State Physics (PHYS 150)
- Atomic Physics and Spectroscopy (PHYS 163)
- Nuclear and Particle Physics (PHYS 164)
- Computational Methods (PHYS 177)

Students seeking an emphasis in biophysics, environmental physics, or chemical physics should consult with an advisor. The physics electives may be selected on an individual basis to stress one of these concentrations.

Students continuing on to graduate school are encouraged to take additional upper-division courses in Mathematics, such as MATH 146A-MATH 146B-MATH 146C, MATH 165A-MATH 165B, and MATH 113.

To graduate, a minimum grade point average of 2.00 (C) is necessary overall and in the upper-division courses taken for the major (those courses listed under section 2).

Although no foreign languages are required for the Bachelor of Science degree, the student who is planning to proceed to graduate work is reminded that reading proficiency in one or more foreign languages is required in some physics graduate programs.

Sample Program

Bachelor of Science

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<thead>
<tr>
<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<td>PHYS 004A, PHYS 004B</td>
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<td>ENGL 001A, ENGL 001B, ENGL 001C</td>
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Sophomore Year

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Junior Year

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<tr>
<td>PHYS 134</td>
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<td>PHYS 135A-PHYS 135B</td>
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<td>PHYS 136</td>
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<td>Electives</td>
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Senior Year

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<td>PHYS 130L, PHYS 138L, PHYS 140L</td>
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<tr>
<td>PHYS 156A-PHYS 156B</td>
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<tr>
<td>Total Units</td>
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Bachelor of Arts

For the B.A. degree, additional units are required in Humanities, Social Sciences, and foreign language to meet the breadth requirements.

Community College Transfers

The department provides special advisory services to aid community college transfer students in formulating their program and in remedying any deficiencies in required course work. Transfer students who have followed the prescribed program at the community college should be able to continue with the sample program at the junior level.

GRADUATE PROGRAM

Ongoing research in the Department of Physics includes astrophysics and space physics, condensed matter physics, particle physics, heavy ion physics, surface science, laser physics, and environmental physics. Large-scale experiments are carried out at the major U.S. and European accelerator laboratories or observatories.

Graduate Record Examination. All applicants must submit scores from the GRE General and Physics subject tests. Questions about requirements for admission should be directed to the Graduate Advisor at (909) 787-5332.

Master’s Degree

A student will be recommended for the degree of M.A. or M.S. in Physics upon completion of requirements (1) and (2) below.

1. Satisfactory completion of a minimum of 36 quarter units of approved physics courses taken for a letter grade after admission to graduate study. Of these at least 24 quarter units must be in the 200 series. Each course must be passed with a grade of “B-” or better. Each student must maintain an average for all courses of “B” or better.

2. Either of the following two plans:

   Plan I. Satisfactory completion of a thesis in a field of physics to be chosen in consultation with a faculty supervisor. This thesis shall be passed upon by a committee designated by the department. In addition, PHYS 401 is required.

   Plan II. Satisfactory performance on the comprehensive examination.

Under either plan all requirements for the Master’s degree must be completed not later than the end of the sixth quarter.

Doctoral Degree

It is recommended that students in the Ph.D. program become associated with a research advisor by the end of their first year.

A student will be recommended for advancement to candidacy for the Ph.D. degree in Physics upon completion of requirements (1), (2), and (3) below. The student will be recommended for the Ph.D. degree upon completion of requirements (4) and (5) below.

1. Satisfactory performance on a preliminary examination, to be taken at the beginning of the student’s second year. The examination is given once each academic year at the beginning of the fall quarter. A make-up exam is offered at the beginning of the winter quarter.

The preliminary examination consists of:

   a) A four-hour written exam that covers Mechanics, and Statistical and Thermal Physics at the undergraduate level; and Quantum Mechanics and Electromagnetism at the graduate level.

   b) An oral exam covering the above material and various other areas of general physics.

Following the examination, the department will review each student’s entire academic performance in order to recommend a pass at the Ph.D. level, a pass at the M.S. level, or a failure. The examination may be
2. Completion of the following courses. Each course must be passed with a grade of "B-" or better. Each student must maintain an average for all courses of "B" or better.

Core courses: PHYS 205 (Classical Mechanics), PHYS 210A-PHYS 210B (Electromagnetic Theory), PHYS 212A-PHYS 212B (Thermodynamics and Statistical Mechanics), PHYS 221A-PHYS 221B-PHYS 221C (Quantum Mechanics), and PHYS 401 (Scientific Writing and Illustration).

In addition, at least three elective graduate lecture courses must be completed. The program for each student must be approved by the graduate committee and by the student's research advisor. Such a program may entail more than the minimum number of courses, and may also involve a mixture of courses from different areas and courses in addition to those listed below.

The elective courses include:

a) Nuclear and Particle Physics:

b) Condensed Matter, Surface, and Optical Physics:

c) Astrophysics:
PHYS 211A (Radiative Processes in Astrophysics), PHYS 211B (Astrophysical Fluid Dynamics), PHYS 208 (General Relativity).

Additional astrophysics courses may be taken at other UC campuses through the Intercampus Exchange Program.

d) Environmental Physics: courses chosen from Condensed Matter, Surface and Optical Physics as well as: SWSC 203 (Surface Chemistry of Soils), SWSC 207 (Advanced Soil Physics), SWSC 213 (Soil Mineralogy), SWSC 221 (Transport and Fate of Inorganic Contaminants in Soil-Water Systems), SWSC 222 (Transport and Fate of Organic Contaminants in Soil-Water Systems), ENTX 215 (Toxicants in Aqueous Media), ENTX 244/CHEM 244 (Airborne Toxic Chemicals), or other approved graduate-level courses in related fields.

e) Additional elective courses include PHYS 207 (Continuum Mechanics), MATH 241 (Mathematical Physics: Classical Mechanics), MATH 242 (Mathematical Physics: Quantum Mechanics).

3. Satisfactory performance on an oral examination in the general area of the student's proposed research.

This examination will be conducted by a doctoral committee, charged with general supervision of the student's research. It will normally be taken during the academic year following that in which the comprehensive examination requirement has been successfully completed. A student who fails this examination on the first attempt may, at the discretion of the committee, be permitted to take it a second time.

4. Satisfactory completion of a dissertation containing a review of existing knowledge relevant to the area of the candidate's research, and the results of the candidate's original research. This research must be of sufficiently high quality to constitute a contribution to knowledge in the subject area.

5. Satisfactory performance on a final oral examination conducted by the candidate's doctoral committee.

The normative time to the Ph.D. degree is 15 quarters for theoretical physics and 18 quarters for experimental physics. The normative time for the specialization in Experimental Physics is 17 quarters for theory and 20 quarters for experimental.

**LOWER-DIVISION COURSES**

Only one of the following sequences, PHYS 002A, PHYS 002B, PHYS 002C, or PHYS 040A, PHYS 040B, PHYS 040C may be taken for credit.

**PHYS 001. Preparation for Physics. (4)**

Lecture, three hours, discussion, one hour. Prerequisite(s): MATH 090A (may be taken concurrently). Overview of quantities used in physics: units, standards, dimensional analysis, and order of magnitude estimates. Development of skills in problem solving using physical reasoning, graphical analysis, and basic mathematical techniques. This course is not intended to satisfy any mathematics, physics, or breadth requirements and is intended for students who plan to take PHYS 002A, PHYS 002B, and PHYS 002C.

**PHYS 002A. General Physics. (4)**

Lecture, three hours, discussion, one hour. Prerequisite(s): MATH 090A or MATH 091A. For biological science students. Topics in classical mechanics including Newton's laws of motion in one and two dimensions; work, energy, and conservation of energy; momentum and collisions; rotational motion; and orbital motion. Credit is awarded for only one of PHYS 002A or PHYS 040A.

**PHYS 002B. General Physics. (4)**

Lecture, three hours, discussion, one hour. Prerequisite(s): MATH 090B or MATH 091B (may be taken concurrently), and a grade of "C-" or better in PHYS 002A. For biological sciences students. Topics in mechanics, thermodynamics, and electromagnetism including fluid mechanics; temperature and heat; the laws of thermodynamics; kinetic theory of gases; electric fields and potentials; current and dc circuits; capacitance and inductance; magnetism; and Faraday's law. Credit is awarded for only one of PHYS 002B or PHYS 040B.

**PHYS 002C. General Physics. (4)**

Lecture, three hours; discussion, one hour. Prerequisite(s): PHYS 002B with a grade of "C-" or better. For biological sciences students. Topics in waves and modern physics including harmonic oscillations; mechanical and electromagnetic waves; geometrical optics; refraction, interference, diffraction, and polarization; and quantum, atomic, and nuclear physics. Credit is awarded for only one of PHYS 002C or PHYS 040C.

**PHYS 02LA. General Physics Laboratory. (3)**

Laboratory, three hours. Prerequisite(s): PHYS 002A (may be taken concurrently). Illustrates the experimental foundations of physics presented in PHYS 002A. Covers the basic principles of classical mechanics. Laboratory is helpful, but not required, for PHYS 002A.

**PHYS 02LB. General Physics Laboratory. (3)**

Laboratory, three hours. Prerequisite(s): PHYS 021A PHYS 021B (may be taken concurrently). Illustrates the experimental foundations of physics presented in PHYS 021B. Covers the basic principles of fluid and rotational mechanics, temperature, heat, and electromagnetism. Laboratory is helpful, but not required, for PHYS 002B.

**PHYS 02LC. General Physics Laboratory. (3)**

Laboratory, three hours. Prerequisite(s): PHYS 021B PHYS 021C (may be taken concurrently). Illustrates the experimental foundations of physics presented in PHYS 021C. Covers the basic principles of oscillations, waves, optics, and radioactivity. Laboratory is helpful, but not required, for PHYS 002C.

**PHYS 007. Space-Time, Relativity, and Cosmology. (4)**

Lecture, three hours; discussion, one hour. Prerequisite(s): none. A nontechnical presentation of the growth of modern science covering topics from Newton and gravitation, Kepler and the motion of celestial bodies, Einstein and relativity, and Planck and Boltzmann to the present day theories on the origin and evolution of the universe. The philosophical ideas, scientific method, historical settings, as well as the intellectual impacts are explored. Demonstrations and visual illustrations. Not open to Physical Science majors.

**PHYS 008. Color and Sound: Dimensions in Communication. (4)**

Lecture, three hours; discussion, one hour. Prerequisite(s): none. The interplay between visual and aural sensory experiences and the physical principles of light and sound. Topics include visual perception and pattern recognition; the color spectrum; optical instruments; anatomy of the camera and the eye; lasers and holography; vibrations and sound waves; acoustics; reverberation; sound production in speech, music, and high-fidelity audio devices. Demonstrations and illustrations. Not open to students who have taken or are concurrently enrolled in PHYS 002A, PHYS 002B, PHYS 002C, PHYS 040A, PHYS 040B, PHYS 040C, and PHYS 040D.

**PHYS 020. Exploring the Universe: An Adventure in Astronomy. (4)**

Lecture, three hours; workshop, three hours. Prerequisite(s): none. An astronomy course for non-science students. The excitement of an evolving and sometimes violent universe of stars and galaxies is explored in a descriptive manner. Here, the union of modern astrophysics and ancient observations with astrophysical laws will provide a sophisticated but by no means complete picture of the
PHYS 021. Kingdom of the Sun. (4)
Lecture, three hours; workshop, three hours.
Prerequisite(s): none. An astronomy course for non-science students. The nearest star, our Sun, and its solar system of planets, moons, asteroids, and comets are presented in a descriptive manner. A historical astronomy of the solar system is traced from ancient concepts to modern space exploration. Special topics such as UFOs and colonisation of space are discussed.

PHYS 039. Adventures in Physics. (2)
Seminar, one hour; discussion, one hour. Prerequisite(s): none. General introduction to frontiers of physics research. Introduces the outstanding issues in physics research, along with work of UC Riverside faculty. Tours of the research labs. Graded Satisfactory (S) or No Credit (NC).

PHYS 040A. General Physics. (5)
Lecture, three hours; discussion, one hour; laboratory, three hours. Prerequisite(s): MATH 009A or MATH 009A; MATH 009B or MATH 009B (MATH 009A or MATH 009B may be taken concurrently). Designed for engineering and physical sciences students. Covers topics in classical mechanics including Newton’s laws of motion in one, two, and three dimensions; friction; circular motion; work, energy, and conservation of energy; the dynamics of particle systems; collisions; rigid-body motion; torque; and angular momentum. Laboratories provide exercises illustrating the experimental foundations of physical principles and selected applications. Credit is awarded for only one of PHYS 002A or PHYS 040A.

PHYS 040B. General Physics. (5)
Lecture, three hours; discussion, one hour; laboratory, three hours. Prerequisite(s): MATH 009C or MATH 009C (may be taken concurrently); a grade of “C-” or better in PHYS 040A. Designed for engineering and physical sciences students. Covers topics in mechanics and thermodynamics including elasticity; oscillations; gravitation; fluids; mechanical waves and sound; temperature; heat, and the laws of thermodynamics; and the kinetic theory of gases. Laboratories provide exercises illustrating the experimental foundations of physical principles and selected applications. Credit is awarded for only one of PHYS 002B or PHYS 040B.

PHYS 040C. General Physics. (5)
Lecture, three hours; discussion, one hour; laboratory, three hours. Prerequisite(s): a grade of “C-” or better in PHYS 040B. Designed for engineering and physical sciences students. Covers topics in electricity and magnetism including electric fields and potential; Gauss’ law; capacitance; magnetic fields; Ampere’s law; Faraday’s law and induction; electromagnetic oscillations; dc and ac currents; and circuits. Laboratories provide exercises illustrating the experimental foundations of physical principles and selected applications. Credit is awarded for only one of PHYS 002C or PHYS 040C.

PHYS 040D. General Physics. (5)
Lecture, three hours; discussion, one hour; laboratory, three hours. Prerequisite(s): a grade of “C-” or better in PHYS 040C or consent of instructor. For engineering and physical sciences students. Topics in electromagnetic waves including Maxwell’s equations; geometrical optics; optical instruments; cavities, and waveguides; interference, diffraction, and polarization; and special theory of relativity. Laboratories provide exercises illustrating the experimental foundations of physical principles and selected applications.

PHYS 040E. General Physics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): a grade of “C-” or better in PHYS 040D or consent of instructor. For engineering and physical sciences students. Topics in modern physics including the quantum theory of light and particles; quantum mechanics in one and three dimensions; tunneling phenomena; the hydrogen atom; statistical physics; lasers; molecular structure; and solid state, nuclear, and particle physics.

PHYS 097. Lower-Division Research. (1-4)
Individual study; three to twelve hours. Prerequisite(s): consent of instructor. Special research projects in physics performed under the supervision of a member of the staff. This course may not be used to satisfy the undergraduate unit requirements in the major. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

UPPER-DIVISION COURSES

PHYS 111. Astrophysics and Stellar Astronomy. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PHYS 010A-MATH 010B, MATH 046, or equivalents; PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D. Stellar interiors, radiations, and evolution. Origin of the elements and particle and electromagnetic radiation. Palaeo; quasars; and other unusual objects. Galactic structure and cosmology.

PHYS 120A-PHYS 120B. Classical Mechanics. (4-4)
Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010B, MATH 046, PHYS 040A, PHYS 040B. Single-particle motion, damped and driven oscillations, coupled oscillations, Lagrangian and Hamiltonian dynamics, central-force motion and Kepler’s laws, the dynamics of particle systems and collisions, rigid-body motion, noninertial reference frames, and special relativity.

PHYS 134. Thermal Physics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010B, PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D, PHYS 040E. Macroscopic properties of many-particle systems. Laws and applications of thermodynamics; entropy; thermodynamic potentials, ideal gases. Principles and applications of statistical mechanics: probability distributions; canonical, microcanonical, and grand canonical ensembles; specific heat of solids; paramagnetism; kinetic theory of gases; phase transitions; quantum statistics.

PHYS 135A-PHYS 135B. Electromagnetism. (4-4)
Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 010B, MATH 046, PHYS 040C. Electrostatic fields and potentials; Coulomb’s and Gauss’ laws; electric multipole, boundary conditions; Laplace’s equation, electroweak in the presence of matter. Electrodynamic fields and potentials: electric currents and circuits, Ampere’s and Faraday’s laws, magnetic multipoles, magnetism in the presence of matter, Maxwell’s equations and their plane-wave solutions.

PHYS 136. Electromagnetic Waves. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PHYS 040D, PHYS 135B. Maxwell’s equations; propagation of electromagnetic waves in wave guides, coaxial lines, and optical fibers; reflection, refraction, and diffraction of waves; dispersion of waves in gases and plasmas; interference and coherence and their role in holography; electromagnetic radiation from charged particles, antennas, masers, and lasers; relativistic electrodynamics.

PHYS 138A. Atomic and Nuclear Physics Laboratory. (3)
Laboratory, nine hours. Prerequisite(s): PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D, PHYS 040E, or consent of instructor. One scheduled four-hour laboratory per week. Balance of hours to be arranged. A laboratory course designed to introduce the student to basic laboratory procedures in atomic and nuclear physics.

PHYS 139L. Electronics for Scientists. (5)
Lecture, three hours; laboratory, six hours. Prerequisite(s): PHYS 040C or consent of instructor. An introduction to basic analog and digital circuit designs emphasizing practical applications. Topics include properties of diodes and transistors; operational amplifiers for use as amplifiers, oscillators, and function generators; properties and use of logic gates, counters, and timers; data storage and synchronization; multiplexer and decoder applications; microprocessor functions and computer interfacing.

PHYS 140L. Advanced Physics Laboratory. (3)
Laboratory, nine hours. Prerequisite(s): PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D, PHYS 040E or consent of instructor. One scheduled four-hour laboratory per week. Balance of hours to be arranged. Experiments chosen from areas of research in contemporary physics, including nuclear magnetic resonance, superconductivity, X-ray diffraction, Rutherford scattering, holography, and cosmic rays.

PHYS 150. Solid State Physics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D, PHYS 040E; or consent of instructor. Properties of systems composed of many atoms arranged in a periodic lattice. Topics include crystal structure, symmetry and diffraction; crystal cohesion; lattice dynamics; thermal properties; metallic properties and the Fermi surface; band theory of metals and semiconductors; superconductivity; and magnetism.

PHYS 156A-PHYS 156B. Quantum Mechanics. (4-4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PHYS 130A, PHYS 135A, MATH 046. Wave-particle duality; the Schrodinger equation, the harmonic oscillator; the hydrogen atom, angular momentum, many electron atoms, perturbation theory, scattering theory, molecular spectra.

PHYS 163. Atomic Physics and Spectroscopy. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 113 or equivalent; or PHYS 156A-PHYS 156B; or consent of instructor. Theoretical and experimental techniques of atom physics. Fine structure and spin-orbit coupling in single-electron atoms; angular momentum coupling and magnetic moments in many-electron atoms; Hartree-Fock solution to many-electron problem; hydrogen-like; atoms in magnetic, electric, and coherent electromagnetic fields; the two-level atom; electron spin resonance spectroscopy; nuclear magnetic resonance spectroscopy; laser spectroscopy; fundamentals of chemical bonding in molecules.

PHYS 164. Introduction to Nuclear and Particle Physics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D, PHYS 040E; or consent of instructor. Basic
nuclear properties, nuclear structure, radioactivity, and nuclear interactions. Properties and classifications of elementary particles, the basic interactions, invariance principles, conservation laws, leptons, and quarks. Nuclear and particle astrophysics.

**PHYS 217. Computational Methods for Physical Sciences. (4)**
Lecture, three hours; laboratory, three hours. Prerequisite(s): PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D, PHYS 040E; or consent of instructor. Computer applications for solving problems in physical sciences. Symbolic manipulation languages such as Mathematica. Mathematical operations, plotting, and symbolic and numerical techniques in calculus. Numerical methods such as histogramming, Monte-Carlo method for modeling experiments, statistical analysis, curve fitting, and numerical algorithms. Prior knowledge of the computer is not required.

**PHYS 100. Special Studies. (1-5)**
Individual study, three to fifteen hours. To be taken with the consent of the chairman of the department as a means of meeting special curricular problems. Units in this course may not be used to meet requirements for the major unless so designated as a replacement for a requirement not being offered during the student's remaining tenure. Course is repeatable to a maximum of 9 units.

**PHYS 195A-PHYS 195B-PHYS 195C. Senior Thesis. (1-4)**
Thesis, three to twelve hours. Prerequisite(s): senior standing; consent of instructor: A thesis written on research conducted under the supervision of a faculty member. May be undertaken as a one-, two-, or three-quarter course. Graded In Progress (IP) until the last quarter is completed, at which time a final, Satisfactory (S) or No Credit (NC) grade is assigned. Total credit awarded for PHYS 195A-PHYS 195B-PHYS 195C may not exceed 8 units; a maximum of 4 units may be used toward the unit requirements for the major.

**PHYS 197. Research for Undergraduates. (1-4)**
Individual study, three to twelve hours. Prerequisite(s): upper-division standing and consent of instructor: Special research projects in physics performed under the supervision of a member of the staff. This course may not be used to satisfy unit requirement in the major. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

**PHYS 198-I. Individual Internship in Physics. (1-12)**
Internship, three to thirty-six hours. Prerequisite(s): upper-division standing; consent of the Department Chair. Designed to provide experience as a practicing scientist in a government or industrial laboratory. A plan must be approved by the Department Chair. The internship is jointly supervised by an off-campus sponsor and a Physics faculty member. Student must submit a written final report. A maximum of 4 units may be used to satisfy major requirements. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

**PHYS 205. Classical Mechanics. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): PHYS 135A-PHYS 135B, PHYS 136, and PHYS 156A-PHYS 156B. Elastic Theory: Stress tensor, strain tensor, elastic tensor; the elastic equation of motion, elastic waves. Hydrodynamics: Equation of continuity, conservation laws, the Euler equation, vorticity, viscous fluids, the Navier-Stokes equations; surface and internal waves; non-linear behavior-solutions, shock waves.

**PHYS 207. Continuum Mechanics. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): PHYS 205. Elastic Theory: Stress tensor, strain tensor, elastic tensor; the elastic equation of motion, elastic waves. Hydrodynamics: Equation of continuity, conservation laws, the Euler equation, vorticity, viscous fluids, the Navier-Stokes equations; surface and internal waves; non-linear behavior-solutions, shock waves.

**PHYS 208. General Relativity. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): PHYS 205. Tensors, covariant derivative, the Riemann curvature tensor and Einstein’s equation. The Schwarzschild metric and applications to the solar system and black holes. Gravity waves and expanding universe.

**PHYS 209A. Quantum Electronics. (4)**
Lecture, four and one-half hours. Prerequisite(s): PHYS 134, PHYS 135A-PHYS 135B, PHYS 156A or consent of instructor. Quantum theory of light and interaction of light with atoms. Density matrix formulation of atomic susceptibility. Propagation of light in matter and optical waveguides. Optical resonators. Theory and operation of common lasers. Letter grades are assigned to students whose research is related to atomic, molecular, or optical physics. Other students receive either a letter or Satisfactory (S) or No Credit (NC) grade.

**PHYS 209B. Nonlinear Optics. (4)**
Lecture, four and one-half hours. Prerequisite(s): PHYS 209A or consent of instructor. Wave propagation in nonlinear media. Electro-optic effect, three- and four-wave mixing, high-resolution nonlinear spectroscopy, rare atom and molecule detection, laser manipulation of particles, high-intensity laser physics, laser-plasma interactions. Letter grades are assigned to students whose research is related to atomic, molecular, or optical physics. Other students receive either a letter or Satisfactory (S) or No Credit (NC) grade.

**PHYS 210A. Electromagnetic Theory. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): graduate standing, consent of instructor. Topics include electrodynamics, Coulomb potential, method of images, Laplace’s equations in Cartesian, spherical and cylindrical coordinates, magnetostrictics, boundary value problems, multipoles, and dielectric media.

**PHYS 210B. Electromagnetic Theory. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): PHYS 210A; graduate standing; consent of instructor. Topics include electrodynamics, Maxwell’s equations, electromagnetic waves, special theory of relativity, tensor analysis, radiation, interaction of electromagnetic fields with charged particles, Lagrangian formulation, gauge transformation, and magnetic monopoles.

**PHYS 211A. Quantum Mechanics. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): PHYS 221A, PHYS 221B, PHYS 221C; or consent of instructor. Covers angular momentum and approximation methods, including perturbation theory.

**PHYS 211B. Quantum Mechanics. (4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): PHYS 221A, PHYS 221B, or consent of instructor. Covers symmetries in quantum mechanics, identical particles, and scattering theory.

**PHYS 212A-PHYS 212B-PHYS 212C. Advanced Quantum Mechanics and Quantum Theory of Fields. (4-4-4)**
Lecture, three hours; consultation, one hour. Prerequisite(s): PHYS 221A, PHYS 221B, PHYS 221C or consent of instructor. Quantum field theories for particles with spins 0, 1/2, and 1. The LSZ formalism, quantum electrodynamics, renormalization, Lee model, and weak interactions. The quark model and current algebra included. Emphasis on the field theoretic aspect of particle physics. Letter grades will be assigned to students whose research is related to quantum mechanics. Other students will receive either a letter or Satisfactory (S) or No Credit (NC) grade.
PHYS 231A-PHYS 231B-PHYS 231C. 
Methods of Theoretical Physics (4-4-4) 
Lecture, three hours; consultation, one hour. Prerequisite(s): graduate standing or consent of instructor. 231A: Analytic functions, Cauchy's theorem, Taylor series and Laurent series expansions, residue theorem, and analytic continuation; 231B: Boundary value problems, integral transforms, Green's functions, and linear integral equations; 231C: Abstract group theory; theory of group representation, physical applications, and full rotation group and angular momentum.

PHYS 240A-PHYS 240B-PHYS 240C. 
Solid State Physics. (4-4-4) 
Lecture, three hours; consultation, one hour. Prerequisite(s): graduate standing or consent of instructor. 240A-240B: Quantum theory of metals, crystal lattices, band theory, electronic transport, lattice dynamics, semiconductors, magnetism, superconductivity; 240C: Methods of field quantization, Green's functions, linear response theory, fluctuation-dissipation theorem, many-body theory. Letter grades will be assigned to students whose research is related to solid state physics. Other students will receive either a letter or Satisfactory (S) or No Credit (NC) grade.

PHYS 242. Physics at Surfaces and Interfaces. (4) 
Lecture, three hours; consultation, one hour. Prerequisite(s): graduate standing or consent of instructor. Overview of surface science; electronic and geometric structure of clean surfaces, techniques for investigating structure, electron spectroscopy of surfaces, adsorption on surfaces, vibrations on surfaces, and epitaxial growth and applications of surface science. Letter grades will be assigned to students whose research is related to surface physics. Other students will receive either a letter or Satisfactory (S) or No Credit (NC) grade.

PHYS 253 (E-Z). Special Topics. (3) 
Seminar, two hours. Prerequisite(s): consent of instructor. Additional prerequisites may be required for segments of this course; see Department. Discusses subjects such as magnetohydrodynamics, astrophysics, and high-energy physics. Graded Satisfactory (S) or No Credit (NC). Some segments of this course may be repeatable; see Department. Chair in charge.

PHYS 260. Selected Topics in Theoretical High Energy Physics. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Topics include the physics of the Standard Model and its extensions; anomalies, spontaneous symmetry breaking, and phenomenology; and cosmological effects of new particles. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 263. The Yukawa Sector 
Beyond the Standard Model. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Covers recent research in determining the quark masses and weak mixing angles through the properties of the Yukawa mass matrices at scales higher than the Standard Model scale. Topics include texture zeros and their possible origin, renormalization group equations, and the role of the condensate mechanism. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 266. Theoretical Aspects of Fundamental Particle Interactions. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Covers electroweak symmetry breaking and the origin of mass; conservation laws and physics beyond the Standard Model; and new theoretical ideas and their possible applications. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 267. Hadron Physics at Electron-Positron Colliders. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Covers phenomenology of electroweak and strong interactions in electron-positron collisions; experimental results; and techniques for investigating the properties and interactions of quarks, gluons, leptons, and the W and Z gauge bosons at high energy e+e- accelerators. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 270. Magnetic Resonance Techniques in Condensed Matter Physics. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Introduces research graduate students to two or three topics in the following areas: nuclear magnetic resonance, muon spin rotation (muSR), and heavy-fermion materials. Topics are selected to correspond to the experience and interests of the students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 271. Heavy Ion Physics. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Heavy ion collisions at high energies. Survey of experimental data and study of theoretical expectations for the production of the quark-gluon plasma. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 272. Deep Inelastic Scattering and Strong Interactions. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. A systematic study of deep inelastic scattering processes and strong interactions. Discussion of experiments with particular emphasis on parton distribution functions and nuclear structure, heavy quark physics, and the search for new particles. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 273. Experimental Tests of Electroweak Physics. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Topics include current and planned precision measurements in the standard electroweak model, electromagnetic and weak production, and decays of quarks, leptons, and bosons. Emphasis on experimental techniques and comparisons of data. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 274. Experimental Relativistic Nucleon-Nucleon Collisions. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Survey of experimental methods used by current relativistic nucleon-nucleon collision detectors at Brookhaven National Laboratory and CERN. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 275. Experimental Physics of Electromagnetic and Weak Interactions. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. A systematic study of electromagnetic and weak interactions. Discussion of experiments with particular emphasis on symmetry principle violations, selection rules, and higher symmetries. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 276. Surface Sciences. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Topics include geometrical and electronic structure at surfaces and interfaces; chemical reactions on surfaces; interactions of radiation with surfaces; mechanisms of film growth on surfaces; and development of novel surface science analytical techniques. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 279. Astrophysics. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Topics include measurements of gamma rays from pulsars and other cosmic sources, measurements of gamma rays and neutrons from the sun, and laboratory magnetosphere and comet experiments. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 281. Theoretical Topics in Condensed Matter Physics. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Theoretical approaches to topics in condensed matter physics including the Hubbard, Kondo, and Anderson models. Studies relating to bosonization, large N large S, and other techniques. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 282. Experimental Investigations of Strongly Correlated Materials. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Examinations of thermodynamic and transport properties in strongly correlated materials which often exhibit unusual broken-symmetry ground states. Measurements of specific heat, resistivity, magnetoresistivity, thermopower, and Hall effect of existing and previously uncharacterized compounds. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 283. Techniques of Microscopy. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Current techniques of microscopy. Covers optical and electron microscopy and novel techniques of scanning microscopy such as scanning tunneling microscopy, near-field scanning optical microscopy, and atomic force microscopy. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 284. Optical Techniques for Measurements in Physics. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Current topics in optical physics and the use of optical and nonlinear optical techniques to make measurements of interest in atomic, molecular, chemical, and condensed matter physics. Emphasizes advances in science enabled by advances in laser technology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 285. Experimental Techniques in Particle Physics. (2) 
Seminar, two hours. Prerequisite(s): graduate standing; consent of instructor. Review of experimental techniques used in particle physics experiments, including tracking, calorimetry, and muon detection. Analysis of experiments at future super-colliders and their physics capabilities, focusing on the searches for the Higgs, top quark physics, and supersymmetric particles. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 289. Colloquium in Physics. (1) 
Colloquium, one hour. Prerequisite(s): graduate standing; consent of instructor. Specialized discussions by visiting scientists, faculty, and students on current research topics in physics. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.
PHYS 290. Directed Studies. (1-6)
Outside research, three to eighteen hours. Prerequisite(s): graduate standing; consent of instructor. Course is repeatable to a maximum of 12 units. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 291. Individual Study in Coordinated Areas. (1-6)
Individual study, three to eighteen hours. Prerequisite(s): graduate standing; consent of instructor. Faculty-assisted programs of individual study for candidates who are preparing for examinations. Graded Satisfactory (S) or No Credit (NC). Course is repeatable within the following limits: Up to 6 units may be taken prior to award of the Master's degree, such units to be in addition to minimum unit requirements for the degree. Up to 12 additional units may be taken (continued) prior to advancement to candidacy for the Ph.D.

PHYS 297. Directed Research. (1-6)
Outside research, three to eighteen hours. Prerequisite(s): graduate standing; consent of instructor. Original research, in an area selected for the advanced degree, performed under the direction of a faculty member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PHYS 299. Research for Thesis or Dissertation. (1-12)
Thesis, three to thirty-six hours. Prerequisite(s): graduate standing; consent of instructor. Original research, in an area selected for the advanced degree, performed under the direction of a faculty member. This research is to be included as a part of the dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PLANT PATHOLOGY

Subject abbreviation: PLPA

Donald A. Cooksey, Ph.D., Chair
Department Office, 2317 Weber Hall
(800) 735-0717 or (909) 787-4116
http://cnas.ucr.edu/~ppath/plantpath.html

Professors
Michael F. Allen, Ph.D. (Plant Pathology/Biology)
Michael D. Coffey, Ph.D.
Donald A. Cooksey, Ph.D.
J. Allen Dodds, Ph.D.
Joseph W. Eckert, Ph.D.
Dennis D. Focht, Ph.D.
David J. Gumpf, Ph.D.
Noel T. Keen, Ph.D. William and Sue Johnson
Chair in Molecula r Plant Pathology
John A. Menge, Ph.D.
Joseph S. Semancik, Ph.D.
James J. Sims, Ph.D.
Michael E. Stanghellini, Ph.D. Cy Mouradick
Chair in Desert Agriculture

Professors Emeriti
Salomon Bartnicki-Garcia, Ph.D.
Paul R. Desjardins, Ph.D.
Robert M. Endo, Ph.D.
David C. Erwin, Ph.D.
James E. Adaskaveg, Ph.D.
Ivan J. Thomason, Ph.D.
(Plant Pathology/Nematology)
Peter H. Tsao, Ph.D.
Seymour D. Van Gundy, Ph.D.
(Plant Pathology/Nematology)

Associate Professors
Howard S. Judelson, Ph.D.
A. L. N. Rao, Ph.D.

Assistant Professors
James E. Adaskaveg, Ph.D.
James G.Borneman, Ph.D.
Shou-Wei Ding, Ph.D.

Lecturers
Marcela G. Grebus, Ph.D.
Lawrence Marais, Ph.D.
Albert O. Paulus, Ph.D.

Affiliated Faculty
Ellis F. Darley, Ph.D. (Plant Pathologist Emeritus)
Martin J. Kolbezen, Ph.D. (Chemist Emeritus)

GRADUATE PROGRAM

In addition to meeting the requirements for admission to the Graduate Division, the student must have a baccalaureate major in a biological science or training equivalent to that given in the Plant Science curriculum of the College of Natural and Agricultural Sciences. Majors in the physical sciences are welcomed, but students must be prepared to augment their undergraduate preparation with courses in the biological sciences. All domestic applicants must provide General Test scores (verbal, quantitative, analytical) for the Graduate Record Examination.

All candidates for the M.S. or the Ph.D. degree should have good basic preparation in chemistry and biology. It is recommended that they have completed courses in biochemistry, organic chemistry, quantitative analysis, elementary college mathematics, general physics, general botany, microbiology, statistics, genetics, plant anatomy, plant physiology, mycology, and plant pathology. If these courses have been completed as an undergraduate, graduate study will be facilitated. If students have not completed these recommended courses prior to admission for graduate studies, they may be required to take them early in their graduate career.

Master's Degree

General University requirements are given in the Graduate Studies section of this catalog. The master's degree is offered under Plans I or II. Plan I (thesis) requires 36 units of upper-division and graduate courses, of which at least 24 must be in the 200 series courses in Plant Pathology or Nematology. A maximum of 12 units may be in graduate research for the thesis. Plan II (comprehensive examination) requires 36 units of upper-division and graduate courses, of which at least 18 must be in the 200 series courses in Plant Pathology or Nematology; excluding graduate research for a thesis or dissertation, and a comprehensive final examination in the major subject.

The departmental graduate advisory committee, in consultation with the student's major professor or curriculum advisor, is responsible for prescribing the course of study which normally includes a minimum, PLPA 200, PLPA 203, PLPA 204, PLPA 206/NEM 206, and participation in PLPA 250 and PLPA 260/NEM 260 for each term the student is registered.

Doctoral Degree

In accord with the student's preparation and specific interests, the departmental graduate advisory committee, in consultation with the
student's major professor or curriculum advisor, prescribes areas where study is required. In addition to selected subjects in plant pathology, related fields in which some degree of competence may be expected is drawn normally from biochemistry, biology chemistry, systematics, genetics, mathematics, microbiology, nematology, plant pathology, soils, and statistics.

The departmental graduate advisory committee, in consultation with the student's major professor or curriculum advisor, is responsible for prescribing the course of study which normally includes as a minimum, PLPA 200, PLPA 203, PLPA 204, PLPA 206/NEM 206, and participation in PLPA 250 and PLPA 260/NEM 260 for each term the student is registered. PLPA 231 and PLPA 240 are strongly recommended for most students.

1. **Qualifying Examinations.** Students must demonstrate to the departmental graduate advisory committee, by written and oral examination, adequate preparation in the fields fundamental to plant pathology and in any area in which students have placed special emphasis in their training. A written dissertation research proposal is to be prepared prior to the qualifying exam and defended during the oral exam. Only after successful completion of the qualifying examination and all other formal requirements, upon the satisfaction of the Dean of the Graduate Division, is the student advanced to candidacy for the Ph.D. degree.

2. **Dissertation.** A dissertation is required of every candidate. The dissertation must be approved by the dissertation committee before the candidate may take the final oral examination.

3. **Final Examination.** A final oral examination is required. It deals primarily with defense of the dissertation and its relation to the field in which its subject lies. The normative time to the Ph.D. degree is 18 quarters.

**GRADUATE COURSES**

**PLPA 123. Introduction to Comparative Virology.** (4) W

Lecture, three hours; discussion, one hour.
Prerequisite(s): BCH 110A-BCH 110B (BCH 110B may be taken concurrently); BIOL 107A or BIOL 121A/MCBL 121A (BIOL 107A or BIOL 121A/MCBL 121A may be taken concurrently); or consent of instructor. Considers viruses as infectious agents of bacteria, plants, and animals (vertebrates and invertebrates). Compares the major groups of viruses to each other with respect to their biological and biochemical properties, molecular and genetic characteristics, and modes of replication. Cross-listed with BIOL 123 and MCBL 123.

**PLPA 134. Introduction to Mycology.** (3) F

Lecture, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, BIOL 005C, or equivalents. Introduction to the morphology, taxonomy, genetics, physiology, ecology, and economic importance of the major groups of the fungi. Cross-listed with BIOL 134.

**PLPA 190. Special Studies.** (1-5)

Prerequisite(s): consent of instructor. To be taken as a means of meeting special curricular problems.

**PLPA 197. Research for Undergraduates.** (1-4)

Prerequisite(s): consent of instructor. Individual research in plant pathology performed under the guidance of members of the staff.

**UPPER-DIVISION COURSES**

**PLPA 200. Fungal Diseases of Plants.** (4) S, Even Years

Lecture, three hours; laboratory, three hours.
Prerequisite(s): BIOL 121A/MCBL 121A and BIOL 121B/MCBL 121B recommended. An introduction to the study of plant diseases. Topics include diseases and disease-causing agents, host-pathogen interaction during disease development, and strategies for disease management. An optional, separate laboratory is offered. Cross-listed with BIOL 120 and MCBL 120.

Stanghellini

**PLPA 204. Viral Diseases of Plants.** (4) S, Even Years

Lecture, two hours; laboratory, six hours. Prerequisite(s): BIOL 120/MCBL 120/PLPA 120 or consent of instructor. A study of viral diseases of plants and the agents causing them. Topics include historical developments, symptomatology, epidemiology, transmission, pathogenesis, and classification of viruses pathogenic to plants. Special emphasis placed on the molecular nature of the pathogens and the processes of pathogenesis.

Dodds

**PLPA 206. Phytopathogens: Nematodes.** (2) S, Odd Years

Lecture, one hour; laboratory, three hours.
Prerequisite(s): graduate standing or consent of instructor. Recognition, diagnosis, biology, and control of major nematode diseases of plants. Laboratory covers identification techniques, soil sampling and processing techniques, and process of pathogenesis. Cross-listed with NEM 206.

Baldwin, Roberts

**PLPA 215. Genetics of Fungi.** (3) S, Even Years

Lecture, three hours. Prerequisite(s): BIOL 102 or consent of instructor. Molecular and cellular mechanisms of fungal reproduction and genetic recombination. Classical and molecular genetic methods used in mycological research. Genetics aspects of fungal metabolism, development, pathogenesis, systematics, and evolution.

Judelson

**PLPA 219. Molecular Plant Virology.** (3) S, Odd Years

Lecture, three hours. Prerequisite(s): PLPA 204. Molecular biology of plant, animal, and bacterial viruses and viroids with emphasis on plant viruses; replication strategies; evolution; genetics; viruses as genetic vectors; and recombination.

Rao


Lecture, two hours; laboratory, six hours. Prerequisite(s): BIOL 134/PLPA 134. A survey of the Ascomycetes and Basidiomycetes (220A) and of the lower fungi, Deuteromycetes, and Myxomycetes (220B). The course will provide an in-depth examination of fungal taxonomy, classification, morphology and life cycles. The historical and ecological importance of certain fungi and their role in plant disease, industry, and human welfare will also be discussed.

Menge

**PLPA 221. Chemical Control of Plant Diseases.** (3) W, Even Years

Lecture, three hours. Prerequisite(s): consent of instructor. A study of the principles of selective toxicity as applied to the control of plant diseases; the chemistry and mechanism of action of antimicrobial agents.

Eckert

**PLPA 227. Molecular Nematology.** (2)

Lecture, two hours. Prerequisite(s): graduate standing or consent of instructor. A review of contemporary molecular plant nematology. Topics include genetics, identification, plant disease resistance, and bioengineering resistance. Discusses the use of Caenorhabditis elegans as a model system for plant nematodes. Cross-listed with NEM 227.

**PLPA 231. Physiology of Plant Disease.** (3) F, Odd Years

Lecture, three hours. Prerequisite(s): BCH 100, BIOL 120/MCBL 120/PLPA 120, or equivalents. A study of the physiology of host-pathogen interactions with emphasis on the metabolism of diseased plants; nature of pathogenicity and defense mechanisms in plants.
PLPA 235. Epidemiology of Plant Disease. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 120/MGB 120/PLPA 120. An introduction to the study of plant disease epidemics and their management. Topics will include: temporal, spatial, and genetic aspects of disease development in plant populations; assessment and prediction of disease and crop loss; inoculum density-disease relationships; and modeling.

PLPA 240. Field Plant Pathology. (1) F
Field trips. Prerequisite(s): consent of instructor. This course will deal with diagnosis of plant disease in the field, collection methods, identification of pathogens, and control methods. Graded Satisfactory (S) or No Credit (NC). Paulus

PLPA 245. Field Mycology. (1) F, Odd Years
Field trips. Prerequisite(s): BIOL 134/PLPA 134 or consent of instructor. This course will deal with observation, collection and identification of fungi both in the field and the laboratory. Course to be graded Satisfactory (S) or No Credit (NC). Menge

PLPA 246. Diagnosis of Plant Disease. (2) W
Lecture, one hour; laboratory, one hour; field, two hours. Prerequisite(s): graduate standing or consent of instructor. Field trips to observe symptomatology of diseases in nature, identification by laboratory and greenhouse tests, approaches to control, culture practices for major California crops, and influences of crop management on disease development. Marais

PLPA 250. Seminar in Plant Pathology. (1)
Seminar, one hour. Reports and discussion of selected topics in plant pathology by graduate students. Graded Satisfactory (S) or No Credit (NC).

PLPA 257. Graduate Seminar in Cell, Molecular, and Developmental Biology. (1)
Seminar, one hour. Prerequisite(s): graduate standing. Lectures by visiting scholars on current research in cell, molecular, and developmental biology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 257, BIOL 257, BMSC 257, INTR 257, ENTX 257, NEM 257, and NRSC 257.

PLPA 260. Current Research in Plant Pathology and Nematology. (1)
Seminar, one hour. Prerequisite(s): graduate status. Topics in plant pathology and nematology will be discussed by outstanding workers in the field from this and other campuses and by graduating students. Graded Satisfactory (S) or No Credit (NC). Cross-listed with NEM 260.

PLPA 261. Colloquium in Recombinant DNA. (1)
Seminar, one hour. Prerequisite(s): graduate status or consent of instructor. Oral reports by visiting scholars, faculty and students on current research topics in recombinant DNA. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 261, BIOL 261, BMSC 261, and ENTR 261.

PLPA 265. A Colloquium on the Principles of Plant Pathology. (3)
Lecture, three hours. Prerequisite(s): advanced standing in the program. Faculty members will rotate as leaders in structured discussions leading to a synthesis of concepts from other courses, the heterogeneity of plant pathology as a scientific discipline, and its unifying principles. Graded Satisfactory (S) or No Credit (NC).

PLPA 290. Research or Study on Special Topics by Individual Graduate Students. (1-6)
Research, one to six hours. Prerequisite(s): graduate status. This course is designed to allow graduate students to study an area or areas not covered by formal course work under a professor who will direct the amount and judge the quality of the work. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 290.

PLPA 291. Individual Study in Coordinated Areas. (1-6)
Research, one to six hours. Prerequisite(s): graduate status. A program of study designed to advise and assist candidates who are preparing for examinations. A student may take up to 12 additional units prior to successful completion of the Ph.D. qualifying examination. Graded Satisfactory (S) or No Credit (NC).

PLPA 297. Directed Research. (1-6)
Graded Satisfactory (S) or No Credit (NC).

PLPA 299. Research for Thesis or Dissertation. (1-12)
Graded Satisfactory (S) or No Credit (NC).

PLPA 299. Research for Thesis or Dissertation. (1-12)
Graded Satisfactory (S) or No Credit (NC).

PLPA 299. Research for Thesis or Dissertation. (1-12)
Graded Satisfactory (S) or No Credit (NC).

POLITICAL SCIENCE

**Subject abbreviation:** POSC

**Professors**

Shaun Bowler, Ph.D.
John C. Laursen, Ph.D.
Mark I. Lichbach, Ph.B.
Max Neiman, Ph.D.
David S. Pion-Berlin, Ph.D.

**Professors Emeriti**

Charles R. Adrian, Ph.D., LL.D.
Francis M. Carney, Ph.D.
Ivan H. Hindenacker, Ph.D., LL.D.
Michael D. Reagan, Ph.D.
Arthur Campbell Turner, M.Litt., Ph.D.
Prank Way, Ph.D.

(Political Science/Religious Studies)

**Associate Professors**

Ronald O. Loveidge, Ph.D.
Jonathan Nagler, Ph.D.

**Assistant Professors**

Julian E. Allison, Ph.D.
Jonathan T. Hiskey, Ph.D.
Andrew H. Kydd, Ph.D.

**Adjunct Professor**

James D. Ward, Jur.D.

**MAJORS**

The Political Science Department offers undergraduate majors leading to the Bachelor of Arts degree in Political Science and in Public Service/Political Science as well as majors in Political Science/Administrative Studies and in Political Science/Law and Society. In addition, the Department offers a Minor in Political Science.

**Counseling**

The Department designates selected members of the faculty as Undergraduate Advisors and each major is assigned to an advisor. Counseling on graduation and departmental requirements as well as counseling on enrollment is handled in the Department Office by the Student Affairs Officer or one of the Student Affairs Assistants. Each student, however, is required to meet annually with an assigned faculty advisor.

For more information about the undergraduate programs, call or write the Department of Political Science, (909) 787-5312. Materials are available on major programs, departmental intern programs, and prospective careers for political science students.

**Political Science Major**

The study of political science provides undergraduates with a variety of possible career opportunities in such areas as law, government service, education, journalism, and business. Because career goals may vary, the department offers two distinct majors. For students planning careers in such areas as law, journalism, or teaching, the traditional major in Political Science is appropriate. For students considering careers in government service, especially for such positions as program and budget analyst, urban planner, and executive or administrative assistant, the appropriate major is the Public Service/Political Science major.

Because of the large number of students who enter law school with majors in political science, the department has a special counseling program for students planning to be attorneys. Further information on the study of law or the legal profession may be obtained from the departmental prelaw counselor.

**Political Science/Administrative Studies Major**

The Political Science/Administrative Studies major combines the disciplinary interests of political science with a particular focus on administrative behavior, tools of decision making, and politics of public policy. The Administrative Studies component of the major provides an interdisciplinary approach to training in administrative analytical skills and more importantly, to the study of the policies, politics, and theories of public administration. The Business Administration courses provide a variety of perspectives on these objectives. In addition, they should provide particular value to those planning either to enter directly into public administration (federal, state, or local
levels) or to attend a professional school of administration.

**Political Science/Law and Society Major**

The Political Science/Law and Society major combines the breadth of a political science major with a particular focus on the theme of law and law-like relationships. The major provides a multidisciplinary approach to the study of legal and law-like institutions and relationships and focuses on relationships which have formed the core of political science: the emergence and development of law, the relationship between law and values, and the growth of the power of the state, among others. The courses provide a variety of perspectives on this theme, and the range of courses should be of particular benefit to those who plan to attend law school.

**Public Service–Political Science Major**

The Public Service–Political Science major introduces students to knowledge and skills associated with managerial career positions in government, without sacrifice of either a broad knowledge of politics or a liberal arts education.

**Degree Requirements**

**University Requirements**

See the Undergraduate Studies Section for requirements that all students must satisfy.

**College Requirements**

See the Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

**Major Requirements**

The Political Science Department offers undergraduate majors leading to the B.A. degree in Political Science, Public Service–Political Science, Political Science/Administrative Studies, Political Science/International Affairs, or Political Science/Law and Society.

**Political Science Major**

The major requirements for the B.A. degree in Political Science are as follows:

1. Lower-division requirements (16 units) / (four courses). The following lower-division courses are required:
   - POSC 005, POSC 010, POSC 015, and POSC 020

2. Upper-division requirements (36 units) / (nine courses)
   a) One course from each of the following areas:
      1. U.S. Government and Politics:
         - POSC 100, POSC 101, POSC 143,
         - POSC 145, POSC 146, POSC 148,
         - POSC 149, POSC 166, POSC 167,
         - POSC 168, POSC 170, POSC 171,
         - POSC 172/URS 172, POSC 173,
         - POSC 174, POSC 179, POSC 181,
         - POSC 182/BSAD 182, POSC 183,
         - POSC 185, POSC 186/BSAD 186
      2. Comparative Government and Politics:
         - POSC 151, POSC 152,
         - POSC 153, POSC 154, POSC 155,
         - POSC 156, POSC 157, POSC 160A,
         - POSC 160B, POSC 161, POSC 162,
         - POSC 165A, POSC 165B
      3. International Relations and Foreign Policy:
         - POSC 123, POSC 124,
         - POSC 125, POSC 126, POSC 128,
         - POSC 129, POSC 130, POSC 163
      4. Political Theory:
         - POSC 110, POSC 111, POSC 112, POSC 113,
         - POSC 116, POSC 117
   b) Twenty (20) additional units in Political Science course work (Not more than 8 units from the 190 series and POSC 142L and POSC 142M are allowed toward the 36-unit upper-division requirement.)
   c) Four (4) units from POSC 198G or POSC 198-I
   d) Additional four (4) units in any upper-division Political Science course

**Requirements for Administrative Studies (37 units)**

1. Four lower-division courses (17 units)
   a) BSAD 010 and BSAD 020A
   b) STAT 048 or equivalent (may be used to satisfy breadth requirements)
   c) CS 008 (may be used to satisfy breadth requirements)

2. Two upper-division courses (8 units) from the list below:
   a) ECON 102A or ECON 130 or ECON 162/BSAD 162
   b) PSYC 140 or PSYC 142/BSAD 142
   c) SOC 150/BSAD 150, SOC 151/BSAD 151, or SOC 171
   d) POSC 181 or POSC 182/BSAD 182 or POSC 183
   e) ANTH 127 or ANTH 131

These two courses must be outside the discipline of the cooperating major and cannot be courses included as part of the three-course Business Administration track or their cross-listed equivalents.

3. A three-course track (12 units) in Business Administration courses from one of the following:
   a) Organizations (General): BSAD 105/ANTH 105, BSAD 150/SOC 150, BSAD 151/SOC 151, BSAD 176/SOC 176
   b) Human Resources Management/Labor Relations: BSAD 142/PSYC 142, BSAD 152/ECON 152, BSAD 153/ECON 153, BSAD 155, BSAD 157
   c) Business and Society: BSAD 116/PHIL 116, BSAD 161, BSAD 184/BSAD 182, BSAD 186/BSAD 186
   d) Marketing: BSAD 110, and two from BSAD 112, BSAD 113, BSAD 114, BSAD 117

A course in statistics is strongly recommended.
2. Upper-division requirements (52 units)

1. Requirements for Political Science
   (52 units)
   All major requirements for the B.A. in Political Science.

2. Requirements for Law and Society
   (36 units)
   a) PHIL 007 or PHIL 007H
   b) LWSO 100
   c) One course chosen from the following list: ECON 111, PSYC 012, SOC 110A, POSC 114 (or equivalent course in research methods)
   d) Five courses chosen from the following list: ANTH 127, ECON 119, HISE 153, PHIL 183, POSC 167, SOC 159 (One of these courses may be replaced by a substitute choice from a list of courses published annually by the Law and Society Faculty Committee. Not more than two of the courses taken to meet this requirement [2.d] may be from the same department.)
   e) LWSO 193, Senior Seminar

Note: in filling the dual requirements of the selected major, students may not count more than two courses toward both parts of their total requirements (Political Science requirements and Administrative Studies requirements).

Political Science/International Affairs Major

The major requirements for the B.A. degree in Political Science/International Affairs are as follows:

1. Lower-division requirements (8 units):
   POSC 015, POSC 016, or POSC 017; and POSC 020

2. Upper-division requirements (64 units):
   a) International Relations (16 units)
      POSC 123, POSC 124, POSC 125, POSC 126, POSC 127, POSC 128, POSC 129, POSC 130, POSC 163
   b) Comparative Politics (16 units)
      POSC 151, POSC 152, POSC 153, POSC 154, POSC 155, POSC 156, POSC 157, POSC 158, POSC 160A, POSC 160B, POSC 161, POSC 162, POSC 165A, POSC 165B
   c) General Political Science Courses (16 units)
      Four other political science courses, in any subfield.
   e) in addition, students must take 4 courses (16 units) from the following:
      ANTH 161, ANTH 163, ANTH 164/LNST 164/MWS 164, ANTH 166/LNST 166
      CPAC 140 (E-Z)
      ECON 113, ECON 171, ECON 175, ECON 178/BSAD 178, ECON 181, ECON 182, ECON 185
      HISA 117B, HISA 164B, HISE 141, HISE 142, HISE 145, HISE 146, HISE 174, HIST 182
      SOC 135, SOC 137, SOC 161

Note: in filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements (Political Science requirements and Law and Society requirements).

Public Service-Political Science Major

The major requirements for the B.A. degree in Public Service-Political Science are as follows:

1. Lower-division requirements (12 units)
   a) POSC 010
   b) One course from POSC 005, POSC 015, POSC 020
   c) ECON 003

2. Upper-division requirements (52 units)
   a) SOC 110A
   b) SOC 110B or STAT 040

Note: in filling the dual requirements of the major, students may not count more than two courses toward both parts of their total requirements (Political Science requirements and Law and Society requirements).

Political Science/Law and Society Major

The major requirements for the B.A. degree in Political Science/Law and Society are as follows:

1. One 4-unit lower-division course in political science, selected from POSC 005, POSC 010, POSC 015, POSC 020

2. Twenty (20) upper-division units to be selected as follows:
   a) One course in each of the following areas (16 units):
      (1) American Politics:
         POSC 100, POSC 101, POSC 143, POSC 145, POSC 146, POSC 148, POSC 149, POSC 166, POSC 167, POSC 168, POSC 170, POSC 171, POSC 172/URS 172, POSC 182/BSAD 182, POSC 185, POSC 186/BSAD 186
      (2) Comparative Politics:
         POSC 151, POSC 152, POSC 153, POSC 154, POSC 155, POSC 156, POSC 157, POSC 160A, POSC 160B, POSC 161, POSC 162, POSC 165A, POSC 165B
      (3) International Relations:
         POSC 123, POSC 124, POSC 125, POSC 126, POSC 127, POSC 128, POSC 129, POSC 130, POSC 163
      (4) Political Theory:
         POSC 110, POSC 111, POSC 112, POSC 113, POSC 116, POSC 122
   b) One course from each of the following (8 units):
      (1) comparative government and politics group:
         POSC 151, POSC 152, POSC 153, POSC 154, POSC 155, POSC 156, POSC 157, POSC 160A, POSC 160B, POSC 161, POSC 162, POSC 165A, POSC 165B
      (2) International relations and foreign policy group:
         POSC 124, POSC 125, POSC 126, POSC 128, POSC 129, POSC 130, POSC 163
      (3) Political theory group:
         POSC 110, POSC 111, POSC 112, POSC 113, POSC 116, POSC 122
b) One additional course (4 units) selected by the student from among those listed in (1) through (4) above.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Honors Program

The Political Science undergraduate Honors Program is designed to provide qualified upper-division Political Science majors with opportunities to engage in upper-division course work in the field in an intensive seminar format and to obtain the necessary training to engage in independent research in the field.

Students with qualifying GPAs are sent an application during the final quarter of their sophomore year. Interested students who do not receive an application and believe they qualify should contact the Political Science Student Affairs Officer. Interested students who become eligible after the last quarter of the sophomore year are considered individually by the Director of the departmental Honors Program.

Upon successful completion of the program, students are awarded, and have posted on their transcripts, the designation Honors, Department of Political Science Undergraduate Honors Program.

Complete details and an application are available from the Political Science Student Affairs Officer.

Prerequisites for the Honors Program

1. Submission of an application during the last quarter of the sophomore year
2. Junior standing (completion of a minimum of 66 units)
3. Minimum GPA requirements or consent of Director
   a) Cumulative GPA of 3.50
   b) A GPA of 3.50 in upper-division major courses

Requirements for the Honors Program

Students must participate in the Political Science Honors Program for a minimum of four, preferably six, quarters.

1. Junior year (or earlier)
   a) POSC 114
   b) SOC 110B, SOC 110C, or STAT 100A, STAT 100B

2. During Junior year
   a) Four (4) units of upper-division Political Science honors course work
   b) Four (4) units of POSC 197 (Research for Undergraduates)

3. Senior year
   a) Four (4) units of upper-division Political Science honors course work or Political Science graduate course work
   b) Eight (8) units of POSC 199 (Senior Research) taken in the fall and winter quarters
   c) Two (2) units of POSC 199 (Senior Research) for senior honors thesis
   d) Submission of an independent thesis at the end of the seventh week of the last quarter of the senior year

Continuation in and successful completion of the program is contingent upon acceptable performance as determined by the political science departmental Honors Program Committee.

Best Thesis Award. A committee consisting of the Chair of the political science department, the Director of the political science Honors Program, and the undergraduate committee identify the best thesis completed each year (summer through spring). The award is announced each spring in a departmental Honors Convocation.

Model United Nations Program

The Model United Nations (MUN) program is a campuswide activity that combines academic and social aspects. However, the academic preparation that underlies the program and trains the participants takes place within the political science department.

There are two plans under which the master's degree is administered. With rare exceptions the department operates under Plan II in administering the master's degree program. Under this plan, students must complete 36 units of which at least 28 units must be in 200-level Political Science courses, including POSC 201 and POSC 202A. In addition, students must complete at least one course from at least three of the five fields offered by the department (see listing below). Up to 8 units of academic work in related fields may be approved by the Graduate Advisor as part of the 36 units. An M.A. comprehensive examination must be passed in one of the following fields: (1) Comparative Politics; (2) International Relations; (3) American Politics; (4) Mass Political Behavior; or (5) Political Theory. Students who wish to be tested in a given field must complete the proper course work. To be examined in Comparative Politics, International Relations, or Political Theory, students must complete the core course and at least one additional course in the appropriate field. To be examined in American Politics, students must complete two courses from those numbered between POSC 250 and POSC 259. To be examined in Mass Political Behavior, students must complete two courses from among those numbered between POSC 255 and POSC 259; at least one of those courses must be chosen from among the following seminars: POSC 255, POSC 256, and POSC 257.
Permission to complete the M.A. program under Plan I (thesis plan) is restricted to students who can demonstrate a readiness to undertake advanced independent research and who can identify a faculty member willing to supervise preparation of the thesis.

**Doctoral Degree**

The doctoral program is organized into three stages. The first stage focuses on intensive course work and preparation for the Ph.D. examination. Normally taking two years, this period is devoted to (1) obtaining substantive background in the discipline through completion of three graduate courses per quarter; (2) selecting two major fields and one minor field of concentration; and (3) satisfying course requirements for the major fields. The major fields may be chosen from among American Politics, Mass Political Behavior; Comparative Politics, International Relations, and Political Theory; the minor field, consisting of three courses, may be chosen from those above or, at the discretion of the Graduate Committee, a cognate field. During this stage, students are also normally expected to satisfy three required courses: POSC 201: Introduction to Political Inquiry, and POSC 202A and POSC 202B: Survey of Quantitative Methods.

Course work in the two major fields varies depending on the fields chosen. For Comparative Politics, International Relations, and Political Theory, students are required to complete the core course plus at least three additional courses. For Mass Political Behavior, students must complete four courses from among those numbered between POSC 250 and POSC 259; at least two of which must be chosen from among the following seminars: POSC 255, POSC 256, and POSC 257. For American Politics, students must complete at least four courses from among those numbered between POSC 250 and POSC 254.

Minors selected from the fields listed above must include the appropriate core course (for Comparative Politics, International Relations, and Political Theory), plus two additional seminars. Minors in Mass Political Behavior are composed of three courses numbered between POSC 255 and POSC 259, at least two of which must be chosen from among the following seminars: POSC 255, POSC 256, and POSC 257. The minor field in American Politics consists of at least three courses chosen from among those numbered POSC 250 and POSC 254.

Specific course work in a cognate minor field varies depending on the course list pre-approved by the Graduate Committee. POSC 290s may be accepted in lieu of seminars. However, prior to passing the Ph.D. examinations, no more than two POSC 290s are allowed, with no more than one in each field of examination. The limit can be exceeded if course staffing or scheduling problems require it. All POSC 290 courses must have prior approval of the Graduate Advisor. A POSC 290 course should only be taken if the material to be covered is not available in a scheduled course.

The second stage of the program is normally one year (Year 3). In the fall quarter, the student enrolls in POSC 291 (Individual Coordinated Study) and prepares for the comprehensive Ph.D. examination. Written examinations in the two major fields are normally taken in the fall quarter of the third year. Postponements to this schedule are allowed in exceptional circumstances; all delays in taking comprehensive examinations must be approved by the Graduate Committee. The winter and spring quarters are devoted in part to the preparation of the Professional Paper (POSC 285), which is required of all students, and Directed Research (POSC 297) to prepare a dissertation prospectus under the direction of the principal advisor. The purpose of the Professional Paper is the writing of a manuscript that demonstrates the capacity of the student to identify, implement, and report on a manageable research topic. Students also complete at least one additional course in both the winter and spring quarters. These courses are determined by the faculty and major advisor in consultation with the student and should be applicable either to completion of work in the minor field or to the dissertation project. In the spring quarter, students are advanced to candidacy upon successful completion of the oral defense of their dissertation prospectus.

Years 4 and 5 comprise the third stage of the program. Students are normally expected to complete their degree within this period. Additional time is provided if circumstances warrant it. Whether circumstances justify additional time is to be determined by the Graduate Committee, in cooperation with the thesis advisor.

Students who do not complete their degree requirements during this two-year period are closely reviewed on a biannual basis. These reviews are provided by the Graduate Advisor, after consultation with the dissertation advisor. Until completion of the Ph.D. requirements, each review includes targeted amounts of required progress, to be completed prior to the next review. Students who fail to complete their scheduled work are reviewed by the Graduate Program Committee for a recommendation of termination from the Political Science graduate program.

The normative time to the Ph.D. degree is 15 quarters.

Additional time is provided if circumstances warrant it. Whether circumstances justify additional time is to be determined by the Graduate Committee, in cooperation with the dissertation advisor. Students who do not complete their degree requirements during this two-year period are closely reviewed on a biannual basis. These reviews are provided by the Graduate Advisor, after consultation with the dissertation advisor. Until completion of the Ph.D. requirements, each review includes targeted amounts of required progress, to be completed prior to the next review. Students who fail to complete their scheduled work are reviewed by the Graduate Program Committee for a recommendation of termination from the Political Science graduate program.

The normative time to the Ph.D. degree is 15 quarters.

General regulations applying to the dissertation and qualifying examinations are found in the Graduate Studies section of this catalog and in other Graduate Division and Department publications.

For further information, write to the Graduate Advisor, Department of Political Science.
UPPER-DIVISION COURSES

POSC 100. Presidential Politics. (4)
Lecture, three hours; outside research, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. A study of the major political philosophers of the social contract and their criticism of issues such as individualism versus community, the roles of religion and of markets in politics, and the adequacy of contract theory for women and minorities.

POSC 116. Political Thought of Socialism. (4)
Lecture, three hours. An examination of the major schools of European socialism thought from the French Revolution to the present. Special attention will be paid to such post-Marxian thinkers as Sorel, Bernstein, Kautsky and Lenin.

POSC 117H. Heresy and Persecution in the Development of Religious Liberty. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing with minimum GPA of 3.50, or consent of instructor. An examination of the interrelationship of Christian theology, persecution, the Reformation, and the development of religious liberty in colonial and early nineteenth-century America.

POSC 118. Ethics in Government. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing, or POSC 010, or consent of instructor. A study of the development and scope of ethical issues in government, with emphasis on problems of representation in elected and administrative office, questions of political responsibility and controversies regarding the role and nature of the public interest in government policy making. Credit is awarded for only one of POSC 118 or POSC 118H.

POSC 119. American Political Thought. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the development of American political thought from the eighteenth century to the present, with attention to issues such as environmentalism, ethnic nationalism, economic freedom, and feminism.

POSC 120. The U.S. Congress. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. A study of the major political institutions of the contemporary U.S. Congress, with an emphasis on the political roles of the institution. Topics include representation, elections, parties and leaders, committees, public policy, and the relationships between Congress and the other branches of government.

POSC 121. The Origins of Our Political Ideas. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. A study of the major schools of political thought of ancient times. Discussed are political philosophers such as Plato, Aristotle, Confucius, and Ashoka.

POSC 122. Skepticism and Liberalism. (4)
Lecture, three hours; individual study, one hour; extra reading, one hour; term paper. Prerequisite(s): upper-division standing. Explores the origins of the modern world of thinking about politics (i.e., liberalism, in a sense that includes both conservatives and liberals) in the ancient skeptics and in early modern skeptics such as Montaigne, Spinoza, Hume, and Kant.

POSC 123. Conflict Resolution. (4)
Lecture, three hours; extra reading, one hour; term paper; two hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of conflict resolution in international relations and domestic conflict. Topics covered include theories of conflict and conflict resolution, negotiation, the role of external powers, mediation, and peacekeeping.

POSC 124. International Relations. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): POSC 020. An in-depth consideration of the major theories of contemporary international relations. Focuses on core issues in international security affairs, such as the causes of war and peace, cooperation and conflict, alliances, perception and misperception, ethnic conflict, and the link between democracy and war.

POSC 125. United States Foreign Policy Since World War II. (4)
Lecture, three hours; outside research, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. A survey of the major developments in U.S. foreign policy from 1945 to the present. Focuses on relations with the Soviet Union, its successor states, and the Third World, within which the uses of force and diplomacy are emphasized.

POSC 126. The Politics of International Trade, Finance, and Development. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): POSC 020. A study of the influence of international economics and world politics on the post-World War II period and the evolution of the institutions governing world trade; the role of multinational corporations; Third World debt and development; the North Atlantic Treaty Organization and the European Union; economic reform in postcommunist societies; and the relationship between trade and the environment.

POSC 127. International Environmental Politics. (4)
Lecture, three hours; individual study, one hour; extra reading, one hour; written work, one hour. Prerequisite(s): POSC 020. A study of the interaction between international economics and world politics. Focuses on the role of multinational corporations; Third World debt and development; the North Atlantic Treaty Organization and the European Union; economic reform in postcommunist societies; and the relationship between trade and the environment.

POSC 128. Comparative Foreign Policy. (4)
Lecture, three hours; individual study, one hour; extra reading, one hour; term paper. Prerequisite(s): upper-division standing. A comparison of foreign policies of the United States and the Soviet Union with special attention to the influence of historical, political, ideological, and systemic factors in their international behavior. Close attention paid to their use of military and economic instruments in their relationship with various actors.

POSC 129. The Proliferation of Weapons of Mass Destruction. (4)
Lecture, three hours; individual study, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): upper-division standing. Introduces students to the politics of weapons of mass destruction, including nuclear, chemical, and biological weapons. Topics covered include why states develop such weapons and whether possession of them increases or decreases the likelihood of war. Also covered are international efforts to stop weapons proliferation, and specific cases of proliferation such as those in India, Pakistan, North Korea, Iraq, and Iran.

POSC 130. Politics and Economics of the Pacific Rim. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Provides students with a broad understanding of the politics and economics of countries that border the Pacific Rim, including Japan, South Korea, Singapore, Taiwan, and China, and of their relationship to the United States. The major issues addressed include economic growth, sociopolitical development, trade, and interdependence.

POSC 131. Politics and American Writers. (4)
Lecture, three hours; consultation, one hour. An examination of the ways that creative writers in the United States have sought to direct or to influence thought and expression about our common national life and political destiny. Novels and poems from the classical period to the present will be studied.

POSC 142. Simulation Laboratory. (2-4)
Participation in and analysis of laboratory models of complex political systems.

POSC 142L. The Nations. (2)
Lecture. Two hours. Examination of the structure and functioning of the United Nations with major emphasis on the principal organs (Security Council, General Assembly), ECOSOC, the Trusteeship Council and the
leading committees. The course will examine theories on the political settlement of disputes, collective security and functionalism. The focus will be on the United Nations as a living, contemporary political institution.

POSC 142M. Model U.N.-Country Studies (Simulation). (2)
Simulation, two hours. Prerequisite(s): POSC 142L. An intensive study of the foreign policy of two selected countries, normally one developed and one undeveloped country, conducted through lectures, discussions, and simulations of their foreign policies being projected in the arena of the United Nations. Can be repeated twice for a total of 6 units.

POSC 143. Elections and Political Participation. (4)
Lecture, three hours; consultation, one hour. An examination of political behavior in the United States with emphasis on political participation and voting behavior.

POSC 145. Money in American Politics. (4)
Lecture, three hours; term paper and extra reading, three hours. Prerequisite(s): POSC 010 or POSC 010H or consent of instructor. The importance of television in American politics. Credit is awarded for only one of POSC 145 or POSC 145H.

POSC 146. Mass Media and Public Opinion. (4)
Lecture, three hours; term paper and reading, one hour. Analysis of public opinion—character, sources, and functions—and especially its relationship to mass media. Particular attention will be devoted to the role and importance of television in American politics. Credit is awarded for only one of POSC 146 or POSC 146H.

POSC 146H. Honors Mass Media and Public Opinion. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing with minimum GPA of 3.50, or consent of instructor. Honors course corresponding to POSC 146. Analysis of public opinion—character, sources, and functions—and especially its relationship to mass media. Particular attention is devoted to the role and importance of television in American politics. Credit is awarded for only one of POSC 146 or POSC 146H.

POSC 148. Politics of Congressional Elections. (4)
Lecture, three hours; individual study, one hour; two term papers. Prerequisite(s): upper-division standing, POSC 010, or consent of instructor. An introduction to the politics of congressional elections. Topics include campaigning for congress, strategic behavior in the decision to run for election, incumbency and money in congressional elections.

POSC 149. Presidential Elections. (4)
Lecture, three hours; laboratory, one hour; extra reading, one hour; research paper, one hour. Prerequisite(s): upper-division standing. Investigation of presidential elections using computer simulation of presidential popularity, public opinion polling, presidential primaries, and the presidential general election. In addition, students use National Election Study data to explore individual-level voter decision making.

POSC 151. British Government and Politics. (4)
Lecture, three hours. A study of constitutional principles and of contemporary government and politics, primarily in the United Kingdom but with some attention to overseas diffusion of the Westminster model of government.

POSC 152. Politics of the Middle East. (4)
Lecture, three hours; individual study, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. The domestic policies and international relations of the contemporary states of the Middle East. Includes analysis of the politics of various transnational forces and the policies of external powers as they impinge on the area.

POSC 153. Soviet Foreign Policy in Transition. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): POSC 020 or any Soviet history/policy course or consent of instructor. Studies postwar Soviet foreign policy with emphasis on recent changes in relations between the U.S. and Eastern Europe and the newly independent states which formerly comprised the USSR. Utilizes various international relations theories and concepts to help students understand these significant changes.

POSC 154. The Government and Politics of the European Community. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Studies the formation of the European Community, its institutional structure, its policy-making processes, and its new role in Europe. Explores its success in the face of Western Europe's persistent nationalism.

POSC 155. Government and Politics in Western Europe. (4)
Lecture, three hours. The comparative study of contemporary government and politics in Western Europe with special attention to the influence of economic, cultural, and other factors upon their formation. Comparative analysis of parties, bureaucracy, legislatures, and executives and of the way in which they reflect and contribute to the political life of the European peoples.

POSC 156. Jewish Politics. (4)
Lecture, three hours; extra reading, one hour; term paper, two hours. Prerequisite(s): POSC 010 or POSC 010H or POSC 015 or consent of instructor. Explores the politics of large and small Jewish communities in the world today, including the United States. Emphasis is given to recent developments in Jewish politics.

POSC 156H. Honors Jewish Politics. (4)
Lecture, three hours; term paper and oral presentation, three hours. Prerequisite(s): upper-division standing with minimum GPA of 3.50, POSC 010 or POSC 010H or POSC 015; or consent of instructor. Honors course corresponding to POSC 156H. Examines the Jewish community in the United States, including political, economic, cultural, and social aspects.

POSC 157. Modern Dictatorships. (4)
Lecture, three hours; individual study, two hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. The study of modern dictatorships, including their origins, development, and practice of Brazilian politics with emphasis on institutional and political forces, human rights, and democratic consolidation.

POSC 158. Politics of Mexico. (4)
Lecture, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. A survey of contemporary Mexican politics. Emphasis is on recent economic and social changes and their impact on Mexico's political system. Topics include relations with the United States, the rise of drug trafficking in Mexico, and the recent emergence of opposition politics.

POSC 160A. Globalization and Underdevelopment. (4)
Lecture, three hours; individual study, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. Critical evaluation of issues and theories about underdevelopment and the prospects for development within the context of globalization. Examines areas of continuity and change, resistance and conflict, and crises and solutions emerging in a post-World War II developing world increasingly connected to a global economy.

POSC 160B. Political Economy: The Nation State and Capitalism. (4)
Lecture, three hours; consultation, one hour. The theory and practice of Brazilian politics with emphasis on institutional and class forces. Attention to major ideas and events: unequal development, traditional and revolutionary politics, nationalism, and authoritarianism, the agrarian transition, mass mobilization, democracy, populism, and elections.

POSC 161. The Politics of Brazil. (4)
Lecture, three hours; consultation, one hour. The theory and practice of Brazilian politics with emphasis on institutional and class forces. Attention to major ideas and events: unequal development, traditional and revolutionary politics, nationalism, and authoritarianism, the agrarian transition, mass mobilization, democracy, populism, and elections.

POSC 162. Latin America: The Quest for Development and Democracy. (4)
Lecture, three hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. A comparative examination of central issues in and components of Latin American history, politics, national and international policies and institutions, and historical context.

POSC 163. Latin America and International Politics. (4)
Lecture, three hours; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. An examination of international and inter-American relations and problems as they affect Latin American nations and situations. Particular attention is given to the impact of the international system on Latin America.

POSC 165A. Political Protest and Social Movements. (4)
Lecture, three hours; individual study, one hour; extra reading, two hours. Prerequisite(s): consent of instructor. The study of social movements, with an emphasis on the history of social movements in the United States and the world.
change and public policy will be emphasized.

Lecture, three hours; individual study, three hours. Prerequisite(s): POSC 015 or 020 or consent of instructor. Exploration of the causes and consequences of the major revolutions in English, French, American, Russian, Chinese, Eastern European, and Latin American historical and comparative contexts. Students also study the revolutionary potential of contemporary states.

Lecture, three hours. An examination of the characteristics of judicial bodies, emphasizing their interaction with other policy-makers and social and political problems. Investigates the policy roles of local, state, and lower federal courts as well as the U.S. Supreme Court.

Lecture, three hours; outside research, one hour; individual study, one hour; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. A study of the legal political context in the U.S. of freedom of expression, the press, and religion; separation of church and state; equal rights for women and minorities; voting rights; and citizenship.

POSC 168. Constitutional Law: Criminal Justice. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. An examination of the rights of criminal defendants; the role of lawyers, police, prosecutors, and judges in the criminal process in the U.S.; the function of the criminal law.

POSC 170. Local Leadership in California. (4)
Lecture, three hours; consultation, one hour. A survey of the local leadership-structure-official and unofficial-in California. An analysis of who decides and influences local policy decisions.

POSC 171. American State Politics. (4)
Lecture, three hours. A critical examination of the activities, structure, and function of the states in the American political system. Concern is with the politics and major policy issues of the 50 states, with a special interest in California.

Lecture, three hours; term paper and extra readings, three hours. Prerequisite(s): upper-division standing. POSC 010 or POSC 010H. A general analysis of urban politics in the United States. Topics include theories of urban politics, structure of political competition, leading political roles, and major policy problems. Cross-listed with URST 172.

POSC 173. Government and Politics of California. (4)
Lecture, three hours; individual study, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): upper-division standing or consent of instructor. An examination of the political process of California with particular attention paid to both electoral and legislative politics and the contribution they make to the issue of democratic governance under conditions of social diversity.

POSC 174. The Political Agenda and the Women's Movement. (4)
Lecture, three hours; individual study; three hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the women's movement as a social movement. The issues that the movement has placed on the political agenda and its impact on social change and public policy will be emphasized.

POSC 175H. Introduction to the Honors Thesis. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Familiarizes students with the procedures and techniques, from theory construction to data collection and analysis, needed to design and conduct original research for an honors thesis. Satisfactory (S) or No Credit (NC) grading is not available.

POSC 176H. Seminar on Writing the Honors Thesis. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): POSC 175H; upper-division standing or consent of instructor. Provides guidance for students writing an honors thesis in political science. Topics include bibliographic research, fieldwork, statistics, case study analysis, professional writing, and standards of academic scholarship. Satisfactory (S) or No Credit (NC) grading is not available.

POSC 177H. Honors Thesis. (1-4)
Thesis, three to twelve hours. Prerequisite(s): POSC 175H; POSC 176H; upper-division standing or consent of instructor. Independent research and preparation of an honors thesis completed under the supervision of a faculty member. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 12 units.

Lecture, three hours; term paper and extra readings, three hours. Prerequisite(s): upper-division standing. POSC 010. Introduces planning as a governing process. Topics include the intellectual, historical, and legal origins of planning by government, especially in urban contexts. Also discusses political considerations such as responsibility and accountability, democratic access, and conflict resolution.

POSC 181. Public Policy/Values, Conflict, and Politics. (4)
Lecture, three hours; outside research, one hour; individual study, one hour; term paper, one hour. Prerequisite(s): upper-division standing and POSC 010. Methods and approaches used to describe, explain, and evaluate public policies are introduced and assessed. Group theories, systems approaches, program planning, and budgeting systems are examples of methods and approaches covered.

POSC 182. Politics and Economic Policy. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the political and administrative processes of economic policy formation, the rationale of government programs, and the mixture of facts, values, and social forces that determine policy. Emphasizes issues of government-economy interaction emerging under the impact of modern technology. Cross-listed with BSAD 182.

POSC 183. Administrative Politics and Theory. (4)
Lecture, three hours; outside research, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): POSC 010 or POSC 010H; upper-division standing or consent of instructor. An introduction to the politics and theory of public administration. Topics include decision-making processes, leadership, formal and informal organization, and the interrelationships among values, structures, and behavior patterns.

POSC 185. Public Budgeting. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division status or consent of instructor. An introduction to state and local budgeting, both revenues and expenditures, with an emphasis on the political, institutional and economic factors in public budgeting.

POSC 186. Regulation & Political Perspective. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Examines government regulation from a political perspective, covering both traditional areas of business regulation and the newer social regulation in areas of environment, health and safety, and personal behavior. Rationales for and against regulation are evaluated, in theory and through case studies. Cross-listed with BSAD 186.

POSC 190. Special Studies. (1-5)
Prerequisite(s): consent of instructor and department chairman. To be taken with the consent of the chair, on the basis of a written proposal endorsed by a supervising instructor, as a means of meeting individual curricular needs.

POSC 196A-POS CO 196B. Most Court: Legal Writing, Research, and Advocacy. (2-2)
Seminar, two hours. Prerequisite(s): senior standing. 3.40 GPA, POSC 167 or POSC 168. A two-quarter introduction to legal materials and methods of research. Second quarter students are assigned by teams to prepare and present arguments in response to a hypothetical legal problem. A grade notation of “In Progress” is given after the 196A segment; a letter grade is given after the 196B segment.

POSC 197. Research for Undergraduates. (1-4)
Research, one to four hours. Offers opportunity for directed individual research, to result in a substantial paper; when a student wishes to do a deeper study of a topic than is possible in the normal term paper.

POSC 198G. Field Work in Political Science. (4)
Tutorial, hours to be announced; assignments, eight hours. Direct evaluation of the local political process through participant observation, combining academic instruction and supervised field work. Students will examine firsthand political behavior and the policy process in one location in local political systems. May be repeated once for credit.

POSC 198I. Individual Internship in Political Science. (1-12)
Internship, two to twenty-four hours; reading and writing, one to twelve hours. Prerequisite(s): upper-division standing and consent of instructor. Intern assignments in major political offices. Students will work as participants and be responsible as observers for theoretical as well as substantive analyses of political behavior and the policy process. May be repeated for up to 16 units.

POSC 199. Senior Research. (1-4)
Outside research, three to twelve hours. Prerequisite(s): upper-division standing and consent of instructor. Independent work under the direction of members of the staff. The project may be undertaken as a one-, two-, or three-quarter sequence. In the case of a two- or three-quarter sequence, the final grade may be deferred until completion of the last quarter. Course is repeatable to a maximum of 12 units.

Graduate status, or, if undergraduate, senior standing with GPA of 3.0 or higher and consent of instructor required for admission to graduate courses.
POSC 201. Introduction to Political Inquiry. (4)
Lecture, three hours; outside research, three hours.
Prerequisite(s): POSC 201 or approval of department graduate committee. 202A: Introduction to statistical analysis. Topics include descriptive statistics, probability, sampling distributions, parameter estimation, hypothesis testing, correlation and bivariate regression analysis. 202B: Data analysis for political science applications. Topics include Statistical Package for the Social Sciences (SPSSX), regression analysis, causal modeling, factor analysis, and cluster analysis in research design context.

POSC 202A–POSC 202B.
Survey of Quantitative Methods. (4-4)
Lecture, three hours; outside research, three hours.
Prerequisite(s): POSC 201 or approval of department graduate committee. 202A: Introduction to statistical analysis. Topics include descriptive statistics, probability, sampling distributions, parameter estimation, hypothesis testing, correlation and bivariate regression analysis. 202B: Data analysis for political science applications. Topics include Statistical Package for the Social Sciences (SPSSX), regression analysis, causal modeling, factor analysis, and cluster analysis in research design context.

POSC 203. Social Science, History, and Qualitative Methodology. (4)
Lecture, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Introduction to the basic epistemology of qualitative social science. Provides students with a working knowledge of the strengths and weaknesses of the historical and comparative case studies approaches to social science.

POSC 204. Mathematical Modeling in Political Science. (4)
Lecture, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Survey of basic mathematical tools relevant to research in political science and other disciplines of the social sciences, with an emphasis on concepts and applications. Topics include sets, matrix algebra, comparative-static analysis, optimization problems, exponential and logarithmic functions, equality constraints in optimization, and integration.

POSC 205. Advanced Regression Analysis. (4)
Lecture, three hours; outside research, three hours.
Prerequisite(s): POSC 202B. Introduction to the use of advanced techniques in regression analysis. Topics include model specification, measures of goodness of fit, two-stage least squares, and models with binary dependent variables.

POSC 207. Advanced Quantitative Analysis. (4)
Lecture, three hours; outside research, three hours.
Prerequisite(s): MATH 005, POSC 202B, or consent of instructor. Introduction to the use of advanced techniques in quantitative analysis. Topics include maximum likelihood, sample selection bias, simultaneous equations.

POSC 209. Introduction to Formal Theory. (4)
Lecture, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Introduces the student to formal theory in political science. Topics covered include utility theory, normal and extensive form games, equilibrium concepts, incomplete information games, public goods, social choice, spatial voting models, and the role of institutions.

POSC 212. Political Theory. (4)
Lecture, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Survey of general issues in political theory. Figures covered may include Plato, Montesquieu, Weber, Arendt, Rawls, Foucault, and others. Debates may include hermeneutics and normativity vs. science; power vs. truth; democracy vs. liberalism.

POSC 216. International Relations. (4)
Lecture, three hours. Historical development and present range of political thought on relations among nations, origins and implications of the idea of sovereignty, the theory of an international community, theories of neoliberalism. The analysis of selected contemporary problems—bipolarity, emergent nations, alliance systems in the light of recent contributions to international relations theory.

POSC 217. Comparative Politics. (4)
Lecture, three hours. Survey and introduction to comparative politics with emphasis on major ideas, trends, and issues in the field. Critical assessment of the literature on systems, political culture, development and underdevelopment, and elites.

POSC 250. Seminar in Politics and the Legal Order. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Intensive reading and research on selected topics in politics and the legal order, such as law and social change, compliance with judicial decision making, and important areas of constitutional law.

POSC 251. Seminar in Urban Analysis and Issues. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. An examination of selected topics bearing on urban phenomena. Topics include theoretical approaches to urban politics, reform issues, specific policy concerns, and sources of conflict in urban settings.

POSC 252. Public Policy. (4)
Seminar, three hours; individual study, three hours.
Prerequisite(s): graduate standing or consent of instructor. Explores approaches to public policy analysis, emphasizing interaction between substance and process in policy development. Covers both theories and concrete case studies; special attention given to the administration stage of policy development.

POSC 253. Constitutional Law. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Designed to acquaint students with the issues and sources of conflict in urban settings.

POSC 254. Seminar on the U.S. Congress. (4)
Seminar, three hours. An examination of major research on the U.S. Congress. Emphasis will be placed upon substantive questions requiring further research and upon methodological techniques appropriate to such research.

POSC 255. Seminar in American Electoral Behavior. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Explores the literature on electoral behavior in the United States. Focuses on the major models of voting behavior developed since 1945. In addition, issues such as voter turnout, economic voting, and presidential primaries are covered.

POSC 256. Seminar in Public Opinion and Mass Media. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Explores classic and contemporary research on public opinion and mass media. Topics in public opinion include political socialization, attitude constraint, and theories of attitude change. Topics in mass media include agenda setting and framing effects.

POSC 257. Comparative Political Behavior and Elections. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Designed to acquaint students with the issues and sources of conflict in urban settings.

POSC 258. Congressional Elections. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Explores the impact of issues and economic conditions on voting behavior in elections, with primary focus on United States presidential elections. The role of campaigns and information are also covered.

POSC 259. Women and the American Political Process. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Explores the impact of issues and economic conditions on voting behavior in elections, with primary focus on United States presidential elections. The role of campaigns and information are also covered.

POSC 300. Economics and Elections. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Explores the impact of issues and economic conditions on voting behavior in elections, with primary focus on United States presidential elections. The role of campaigns and information are also covered.

POSC 302. War Termination and Conflict Resolution. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Explores the impact of issues and economic conditions on voting behavior in elections, with primary focus on United States presidential elections. The role of campaigns and information are also covered.
quences for regional and national political-economic development.

POSC 265. Seminar in American Foreign Policy. (4)
Seminar, three hours; consultation, one hour. Reading and research in selected topics that concern the making of foreign policy and the roles of force and diplomacy.

POSC 266. Political Economy of Growth. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): POSC 202A-POS C 202B or consent of instructor. Examination of political and economic aspects of growth using a formal and quantitative approach. Topics include political institutions, social development, economic growth, and democratization. Emphasis is on the interaction and causality between political and economic variables.

POSC 270. Comparative Analysis. (4)
Lecture, three hours. Prerequisite(s): consent of instructor. A critical examination of the theoretical and methodological presuppositions of comparative research. Detailed analysis of leading works and trends in the field. Discussion of relevant strategies of research.

POSC 271. Comparative Political Economies. (4)
Seminar, three hours; research, three hours. Prerequisite(s): graduate standing or consent of instructor. Past attempts to address such questions as "What part does government play in the economy?" have been made within the disciplinary boundaries of political science or economics. Such questions, however, cut across the domains of economics and political science, and the new political economy attempts to integrate theories and insights from both disciplines. This course will examine this literature to see how successful it has been in explaining important aspects of the interrelationship between politicians and the economy.

POSC 272. Parties and Party Systems in Western Europe. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Examines some of the literature on parties and party systems in Western Europe, with special attention to the role of such systems in modern representative democracies and to debates in the literature on this topic.

POSC 273. Rational Choice in Comparative Politics. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Examines some of the literature on parties and party systems in Western Europe, with special attention to the role of such systems in modern representative democracies and to debates in the literature on this topic. This seminar critically reviews and discusses the contribution the rational choice perspective has made as well as the debates it has sparked.

POSC 274. The Armed Forces and Politics. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Examines the role of the armed forces in political society covering western-democratic, communist, post-communist, and third world systems. Comparisons of civil-military relations across regions are made, with an emphasis on military political intervention and civilian control strategies.

POSC 275. Protest and Revolution. (4)
Lecture, three hours; outside research. Prerequisite(s): graduate standing or consent of instructor. Examination of the major theoretical and empirical studies of political protest and social revolution. Explores rationalist, cultural, and structuralist theories, and quantitative and qualitative methodologies.

POSC 278. Seminar in Latin American Politics. (4)
Seminar, three hours. Critical examination of fundamental issues of Latin American politics with attention to varying interpretations and approaches to the study of elites and masses, power and class conflict, development and under-development.

POSC 280. Seminar in Political Theory. (4)
Seminar, two or three hours. Prerequisite(s): consent of instructor. A detailed study at an advanced level of political theories and concepts, and the writings of the major theorists, confined to some selected era or limited to some selected major theme.

POSC 281. Seminar in the History of Political Thought. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Advanced study of the methodology and practice of research in the history of political thought.

POSC 284 (E-Z). Special Topics. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Covers a single topic not contained in a regular course. Announcements of each topic are made at the time of offering.

Outside research, twelve hours. Prerequisite(s): graduate standing or consent of instructor. An independent study course focusing on writing a substantial research paper, emphasizing research design problems. Must be accomplished within two quarters following doctoral qualifying examinations. If completed in one quarter, a grade will be assigned for 4 units. If two quarters are necessary, course will be graded In Progress (IP) until both terms are completed when the final grade will be assigned for eight units. Course is repeatable to a maximum of 8 units.

POSC 290. Directed Studies. (1-6)
Variable hours. Prerequisite(s): consent of instructor. Advanced work in a topic or topics appropriate to the student’s special interests and needs. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

POSC 291. Individual Study in Coordinated Areas. (1-12)
Variable hours. Prerequisite(s): consent of instructor. A program of study designed to advise and assist candidates who are preparing for doctoral examinations. Graded Satisfactory (S) or No Credit (NC). May be repeated up to a total of 16 units. Does not count toward the unit requirement for the master’s degree.

POSC 292. Concurrent Analytical Studies. (2-4)
Research, eight to sixteen hours. Prerequisite(s): consent of instructor. Each 292 course will be taken concurrently with one or more 100-series course, but on an individual basis. It will be devoted to completion of a graduate paper based on research or criticism related to the 100-series course. Faculty guidance and evaluation will be provided throughout the quarter. POSC 114, POSC 142 (E-Z), POSC 185, BSAD 186/POSC 186, and POSC 180 through POSC 199 may not be used for this course arrangement. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

POSC 293. Research Topics in Political Science. (1)
Lecture, two hours. Lectures and discussions by invited scholars and faculty on selected research topics in political science. Three units required for Master’s level students and 4 units required of doctoral level students. Graded Satisfactory (S) or No Credit (NC).

POSC 297. Directed Research. (1-6)
Outside research, three to eighteen hours. Individual research performed under the direction of a faculty advisor. Designed for students preparing their dissertation prospectuses. Students meet in groups by appointment with a faculty advisor to discuss issues of dissertation writing. Emphasis is placed on the development of research design. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 18 units.

POSC 299. Research for Thesis or Dissertation. (1-12)
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

POSC 301. Teaching of Political Science at the College Level. (2)
Seminar, one hour; practicum, three hours. Prerequisite(s): graduate standing in Political Science. A program of weekly meetings and individual formative evaluation required of new Political Science Teaching Assistants. Covers instructional methods and classroom/section activities most suitable for teaching Political Science. Conducted by departmental faculty or the Teaching Assistant Development Program. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

POSC 302. College Teaching Practicum. (1-4)
Practicum, two to eight hours; consultation, one to four hours. Prerequisite(s): graduate standing and consent of instructor. Required of all teaching assistants in the department. Credit not applicable to graduate unit requirements. Supervised teaching in college level classes under the supervision of the course instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.
PSYCHOLOGY

Subject abbreviation: PSYC

John H. Ashe, Ph.D., Chair
Department Office, 1419 Life Sciences Psychology
(909) 787-5386; http://www.psych.ucr.edu

Professors
G. John Andersen, Ph.D.
John H. Ashe, Ph.D.
(Psychology/Cell Biology and Neuroscience)
Christine Chiarello, Ph.D.
M. Robbin DiMatteo, Ph.D.
Howard S. Friedman, Ph.D.
David C. Funder, Ph.D.
Mary Guvain, Ph.D.
Nancy G. Guerra, Ph.D.
Ross D. Parke, Ph.D.
Robert Rosenthal, Ph.D.
B. Glenn Stanley, Ph.D.
(Psychology/Cell Biology and Neuroscience)
Barbara J. Tinsley, Ph.D.
David H. Warren, Ph.D.

Professors Emeriti
Arlo K. Myers, Ph.D.
Marvin Nachman, Ph.D.
Lewis Petrinovich, Ph.D.
Robert D. Singer, Ph.D.
Sally E. Sperling, Ph.D.
Ovid J-L. Tzeng, Ph.D.
Richard E. Whalen, Ph.D.
Paul D. Wilson, Ph.D.

Associate Professors
Curt Burgess, Ph.D.
Steven E. Clark, Ph.D.
Carolyn B. Murray, Ph.D.
(Anthropology/Cell Biology and Neuroscience)
Daniel J. Ozer, Ph.D.
Lawrence D. Rosenblum, Ph.D.

Assistant Professors
Ruth K. Chao, Ph.D.
Sabine E. French, Ph.D.
Peter W. Hickmott, Ph.D.
Sonja Ilyinomorskii, Ph.D.
Chandra A. Reynolds, Ph.D.

Cooperating Faculty
Robert C. Calfee, Ph.D. Graduate School of Education

MAJOR

The major in Psychology is designed to give students a broad, general exposure to knowledge in the various areas of psychology and to the methods psychologists use to conduct research. The B.A. degree in Psychology is useful to those students seeking careers in probation and parole, corrections, personnel, industrial relations, mental health work, social work, or positions as trainees in a variety of executive training programs. The B.A. degree in Psychology also prepares students for graduate school in psychology in either M.A. or Ph.D. programs. Such graduate programs prepare students for a variety of career possibilities. Careers include teaching and research positions in community and private colleges and state and other universities as well as career positions such as research psychologist, clinical psychologist, counseling psychologist, and industrial psychologist. For more information, see http://www.psych.ucr.edu.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

The lower-division biological, physical sciences, and mathematics requirements for the Psychology major will also count toward the College’s Natural Sciences and Mathematics breadth requirement. Consult with a departmental advisor.

Major Requirements

The Psychology major requires early, satisfactory completion of certain lower-division requirements. The lower-division requirements listed below must be completed by the end of the sophomore year, with an average grade of "C" or better, with no grade below a “C-”, and before upper-division Psychology courses are taken. All courses must be taken for a letter grade. Transfer students and others entering the major after achieving sophomore standing must complete the requirements within one year by enrolling in applicable courses every quarter until the requirement is met. Students who do not complete the lower division requirements in this timely fashion and with at least the minimum required grade average will not be permitted to continue in the Psychology major. Students must check course descriptions for prerequisite requirements.

The major requirements for the B.A. degree in Psychology are as follows.

1. Lower-division requirements (36 units)
   a) One course in Mathematics, Statistics, or Computer Science
   b) One course in biological sciences chosen from BIOL 002 or BIOL 005A, BIOL 003 or BIOL 005B, BIOL 005C, BIOL 034
   c) One course in physical science chosen from
      (1) CHEM 001A-CHEM 001B-CHEM 001C, CHEM 003
      (2) PHYS 002A-PHYS 002B-PHYS 002C, PHYS 007, PHYS 008, PHYS 020, PHYS 021, PHYS 040A-PHYS 040B-PHYS 040C
      (3) Any Geosciences courses except for cultural geography courses
   d) Two additional courses from a), b), or c) above
   e) PSYC 001, PSYC 002, PSYC 011, PSYC 012

2. Upper-division requirements (36 units)
   a) PSYC 110 or NSRC 016
   b) PSYC 140, PSYC 150
   c) PSYC 132 or PSYC 134
   d) PSYC 160 or PSYC 161 or PSYC 163
   e) Four additional 4-unit, upper-division Psychology courses. Only one quarter of EDUC 106/HMDV 106/PSYC 106 and only one 4-unit quarter of PSYC 198G may be included. No 190-series courses other than PSYC 198G may be used.

Students planning for graduate school should take into consideration any specific graduate school requirements when choosing these elective Psychology courses.

Note: Students who have taken general or introductory Psychology courses other than PSYC 001 and PSYC 002 must consult with a departmental advisor.

Sample Program

This sample program provides a curriculum for the Psychology student who does not need remedial English or remedial Math, and does need four quarters of a foreign language.

<table>
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<th>Freshman Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<tbody>
<tr>
<td>ENGL 001A, ENGL 001B, ENGL 001C</td>
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<td>Total Units</td>
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specific research project and thesis; to provide seminars by our faculty and others on current issues and research in psychology, and to assist in preparation for graduate school.

In general, students should be able to participate for at least four; and preferably six, quarters during the junior and/or senior years. Students are encouraged to start Honors enrollment in fall quarter.

All interested students who believe they are eligible may request an application from Psychology Student Affairs. The application should be submitted in the quarter in which 86 units will be completed.

**Prerequisites**

1. Completion of a minimum of 86 units prior to the first quarter in the program.
2. Course requirements
   a) PSYC 011 with grade "B+" or better
   b) PSYC 012 with grade "B+" or better
3. Minimum GPA requirements (or consent of Director)
   a) 3.50 cumulative GPA
   b) 3.50 major GPA (include PSYC 011 and PSYC 012; exclude courses numbered in the 190s)
4. Ability to participate for a minimum of four continuous quarters

**Requirements**

1. Participation in the Program for a minimum of four continuous quarters
2. Attendance at all Psychology Department colloquia
3. Completion of the following course requirements
   a) Junior year
      (1) PSYC 192H, Seminar (all quarters)
      (2) PSYC 198H, Research (second and third quarters)
   b) Senior year
      (1) PSYC 193H, Seminar (all quarters)
      (2) PSYC 199H, Research (2 units, first and second quarters)
      (3) PSYC 195H, Thesis (third quarter)
4. Submission of an independent thesis in the fifth week of last quarter of senior year
5. Poster session presentation near the end of the last quarter of the senior year

**Minor**

The Psychology Department offers a minor in Psychology.

Prerequisites for the minor are PSYC 001, PSYC 002, PSYC 011, and PSYC 012, with an average grade of grade of "C" or better, with no grade below a "C-".

Requirements for the Psychology minor are as follows (20 units):

1. Twenty (20) upper-division Psychology units
   a) PSYC 110 or NRSC 106
   b) PSYC 132 or PSYC 134
   c) PSYC 140 and PSYC 150
   d) PSYC 160 or PSYC 161 or PSYC 163

Minors

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

**Psychology Undergraduate Honors Program**

The purpose of the Psychology Department's Undergraduate Honors Program is threefold: to allow junior- and senior-level Psychology, Human Development, and Neuroscience majors with qualifying grade point averages to work intensively with a faculty member on a specific research project and thesis; to provide seminars by our faculty and others on current issues and research in psychology, and to assist in preparation for graduate school.

In general, students should be able to participate for at least four; and preferably six, quarters during the junior and/or senior years. Students are encouraged to start Honors enrollment in fall quarter.

All interested students who believe they are eligible may request an application from Psychology Student Affairs. The application should be submitted in the quarter in which 86 units will be completed.

**Prerequisites**

1. Completion of a minimum of 86 units prior to the first quarter in the program.
2. Course requirements
   a) PSYC 011 with grade "B+" or better
   b) PSYC 012 with grade "B+" or better
3. Minimum GPA requirements (or consent of Director)
   a) 3.50 cumulative GPA
   b) 3.50 major GPA (include PSYC 011 and PSYC 012; exclude courses numbered in the 190s)
4. Ability to participate for a minimum of four continuous quarters

**Requirements**

1. Participation in the Program for a minimum of four continuous quarters
2. Attendance at all Psychology Department colloquia
3. Completion of the following course requirements
   a) Junior year
      (1) PSYC 192H, Seminar (all quarters)
      (2) PSYC 198H, Research (second and third quarters)
   b) Senior year
      (1) PSYC 193H, Seminar (all quarters)
      (2) PSYC 199H, Research (2 units, first and second quarters)
      (3) PSYC 195H, Thesis (third quarter)
4. Submission of an independent thesis in the fifth week of last quarter of senior year
5. Poster session presentation near the end of the last quarter of the senior year

**Education Abroad Program**

The Psychology Department encourages eligible students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units toward graduation. Because strategy in choosing courses to be taken here and courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult departmental Student Affairs Officer for assistance. For further details, see Education Abroad Program under International Services Center in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

**GRADUATE PROGRAM**

Graduate training in psychology is offered in four major areas: Cognitive, Social/Personality, Developmental, and Systems Neuroscience. Students entering the graduate program are normally expected to have completed the equivalent of an undergraduate major in Psychology at the University of California, with background preparation in basic science and mathematics. Applicants for graduate status must provide scores for the general test (verbal and quantitative) of the Graduate Record Examination prior to admission.

The Ph.D. degree is a research degree. Applications are not accepted from students wishing to work towards the master's degree only. Students are required to demonstrate the ability to carry to completion rigorous empirical research and are expected to be active in research throughout their graduate career. The course requirements in the Ph.D. program are directed toward establishing a foundation for critical evaluation of research literature and the designing of conceptually important empirical research.

**Doctoral Program Requirements**

The courses normally required during the first two years include

1. PSYC 211, PSYC 212, PSYC 213 (Systems Neuroscience students take two of the three, as directed by the student's advisor.)
2. The appropriate area core: Cognitive, PSYC 203A-PSYC 203B-PSYC 203C; Developmental, PSYC 207A, PSYC 207B, PSYC 207C, and PSYC 208; Social/Personality, PSYC 225, PSYC 226, PSYC 227, and PSYC 228; Neuroscience, NRSC 200A-NRSC 200B-NRSC 200C/PSYC 200A-PSYC 200B-PSYC 200C
3. Four additional courses or seminars outside the student's area of specialization to acquire breadth. The breadth requirement is flexible in order to provide a choice of courses suitable for students in the different specialization areas within the Depart-
Courses can be in the Department of Psychology or in another department. They must be regular 3- or 4-unit courses or seminars, and at least one of the four courses must be a Departmental core course (listed in 2, above) outside the student's area of specialization. Psychology courses in the student's area of specialization offered by other departments will typically not be approved.

For a course to satisfy the breadth requirement, approval prior to enrollment must be obtained from all the faculty in the student's area of specialization or from a three-member advisory committee in the student's area. Exceptions to the "prior approval" rule will be granted to students who have completed graduate-level course work prior to entering the UCR program. Students may request that specific courses be accepted toward satisfaction of the breadth requirement. This request will be reviewed by the student's area faculty, who will utilize procedures and standards typically applied to the preapproval of breadth courses.

4. PSYC 301: Required of all graduate students prior to or concurrent with the first Teaching Assistant appointment unless waived by petition due to previous experience.

Graduate students are expected to maintain a minimum overall "B" average. Further, a "B" average or better is required in each of the core sequences and in the breadth courses (or an S if the course is a nongraded seminar).

Progress in the program is formally evaluated in June of each year and informally on a continuing basis by noting participation in class and in research. All students in the graduate program are held to these requirements whether or not they have taken graduate work at, or hold an M.A. from, another institution. The only exception may be for previously-taken graduate-level course work which is thought to be equivalent to one or more of PSYC 211, PSYC 212, or PSYC 213. If a grade of "B" or better was received, and with the approval of the advisor, the student may be tested by a departmental instructor of the course(s) in question. Based upon the results of the test, the instructor will decide if the course can be waived.

Master's Degree. Although there is not a separate terminal master's program, students may qualify for the master's degree after completing the requirements in (1), (2), at least one-half of the breadth requirement in (3), (4), a minimum of 36 units in graduate status, of which at least 18 must be in graduate course work, and after passing an oral comprehensive examination administered by the Psychology Department.

Teaching Experience. Each student is required to gain experience in a teaching capacity for the equivalent of at least three full quarters. Teaching Assistants assist a faculty member in an undergraduate course by preparing and grading examinations, reading papers, lecturing, and conducting discussion and laboratory sections.

Qualifying Examination. The qualifying examination should be taken during the third year of full-time graduate study. It consists of a written component and an oral examination, and focuses on the subject matter in the student's chosen area of concentration.

A qualifying committee should be nominated early in the third year, and all core and breadth requirements must be completed no later than the quarter in which the qualifying examination is taken.

On the basis of this examination (and completion of the core and breadth requirements), the student may (1) pass and be advanced to candidacy for the Ph.D.; (2) fail, and be permitted one retake; (3) be awarded the M.A. (if not previously awarded) but not be advanced to candidacy for the Ph.D.; or (4) not be awarded the M.A. and not be advanced to candidacy for the Ph.D.

Advancement to Candidacy. Upon successful completion of (1), (2), (3), and (4), passing the qualifying examination, and nomination of the dissertation committee, the Graduate Division sends the student an application for advancement to candidacy.

Dissertation. A dissertation on a subject chosen by the candidate, bearing on the principal area of concentration, and showing the student's ability in independent investigation, is required for the degree. The student is guided in the preparation of the dissertation by the dissertation committee. After completion of the dissertation, the student is examined in its defense by the dissertation committee.

The normative time to the Ph.D. degree is 15 quarters. Each of the four major areas may have additional requirements. Occasionally, a change in courses used to satisfy specific requirements may be justifiable. For a complete description of the program, call (909) 787-5386 or write and request a departmental brochure and application.

Minor in Quantitative Psychology
In addition to pursuing a doctoral degree in one of the core areas of psychology, graduate students may qualify, under the direction of the Committee in Charge of the Quantitative Minor, for a Minor in Quantitative Psychology by completing the following requirements:

1. PSYC 211, PSYC 212, and PSYC 213, with a grade of "A" or better in each course, or passing an examination covering the three courses.

2. Three advanced quantitative courses: PSYC 259 (with different titles) or other courses specifically approved by the Committee in Charge.

3. Three quarters of PSYC 270

4. Successful completion of an oral qualifying examination based upon a paper written by the student on a quantitative topic.

A three-person faculty qualifying committee, approved by the Chair of the Committee in Charge, must grant prior approval of the topic of the paper and conduct the oral examination. The candidate and the committee will determine the format of the oral exam; a presentation in PSYC 270 based on the paper will satisfy the oral examination requirement.

Opportunities for Graduate Study in Neuroscience
Faculty from the Department of Psychology participate in a unique graduate specialization in Neuroscience which draws on the strengths of distinguished scientists from several units. For further information concerning work in this area, see Neuroscience Graduate Study in the Curricula and Courses section of this catalog.
PSYC 011L. Psychological Methods: Computers and Statistical Procedures. (1) Laboratory, three hours. Prerequisite(s): PSYC 011 or concurrent enrollment. Computer laboratory exercises covering data management, score transformations, and basic descriptive and inferential statistics as used in psychological research. Graded Satisfactory (S) or No Credit (NC). Credit is not allowed for PSYC 011L if PSYC 010B has been completed with a grade of "C-" or above.

PSYC 012. Psychological Methods: Research Procedures. (6) Lecture, three hours; laboratory, three hours; outside research, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, each with a grade of "C-" or better; ENGL 001C or equivalent with a grade of "C-" or better; consent of instructor. A systematic survey of research methodologies in psychology. Laboratory assignments include evaluating and testing psychological theories, assessing methodologies and research designs, designing and implementing research, collecting data and analyzing statistics, writing research reports, and discussing ethical issues in science.

PSYC 091. Sophomore Seminar: Approaches to Psychological Research. (2) Prerequisite(s): PSYC 001, PSYC 002, sophomore standing; consent of instructor. Presentation by individual faculty members of their research programs; discussions of readings provided by faculty members; discussion of research conceptualization, design, methodology, and statistics. Short written assignments required. Enrollment limited. Graded Satisfactory (S) or No Credit (NC) only.

PSYC 096. Research for Lower-Division Students. (1-2) Scheduled research, three to six hours. Prerequisite(s): PSYC 001, PSYC 002, sophomore standing and consent of instructor. An introduction to research in psychology. Emphasis upon aspects of library and laboratory research within the content of ongoing faculty research programs. Graded Satisfactory (S) or No Credit (NC) only. Course is repeatable to a maximum of 6 units.

UPPER-DIVISION COURSES

PSYC 106. Practicum in Child Development. (4) Lecture, three hours; practicum, three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012, with a grade of "B-" or better; or equivalents; or consent of instructor. An introduction to research in psychology. Emphasis upon aspects of library and laboratory research within the content of ongoing faculty research programs. Graded Satisfactory (S) or No Credit (NC) only. Course is repeatable to a maximum of 6 units.

PSYC 109. Advanced Research Methods. (4) Lecture, three hours; laboratory, three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012, each with a grade of "C-" or better; or equivalents; or consent of instructor. Advanced theory and practice of planning, conducting, reporting, and evaluating research in the social and behavioral sciences. Students conduct original research that, if desired, can lead to (and become part of) a senior honors thesis or other senior-level research project. Satisfactory (S) or No Credit (NC) grading is not available.

PSYC 110. The Brain and Behavior. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. Emphasis on the evolution of the brain and memory. Topics include sensory and perceptual processes, biological aspects of learning and memory, motivation, emotion, language, and abnormal behavior. Credit is awarded for only one of PSYC 110L/PSYC 110 or PSYC 110.

PSYC 120. Cellular Neuroscience: Membrane and Synaptic Phenomena. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): NSCS 106 or consent of instructor. The nervous system serves as the fundamental information processing system in the vertebrates. The course utilizes concepts drawn from the study of vertebrates and invertebrates with emphasis on mammalian systems. Cross-listed with NSCS 120.

PSYC 120L. Neuroscience Laboratory. (2) Lecture, one hour; laboratory, three hours. Prerequisite(s): NSCS 120/L/PSYC 120 or concurrent enrollment. Laboratory experiments using anatomical, chemical, and physiological research methods fundamental to understanding neurons and neural systems. Cross-listed with NSCS 120L.

PSYC 124. Systems Neuroscience. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): NSCS 106 or consent of instructor. Study of the structure and function of motor, sensory, and motivational systems in vertebrate and invertebrate nervous systems. Cross-listed with NSCS 124.

PSYC 125. Neuropharmacology. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): NSCS 120/L/PSYC 120; previous or concurrent enrollment in NSCS 120/L/PSYC 120 and NSCS 124/PSYC 124 recommended. Examines synaptic neurotransmitter systems, mechanisms, and pharmacological agents and effects, which are fundamental to neural information processing. Cross-listed with NSCS 125.

PSYC 126. Neurobiology of Learning and Memory. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): NSCS 120/L/PSYC 120 or consent of instructor. Covers recent research and advances in the understanding of the physiological, anatomical, and biochemical basis of information acquisition and retention in nonhuman and human brain. Cross-listed with NSCS 126.

PSYC 127. Behavioral Control Systems. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): NSCS 120/L/PSYC 120; NSCS 124/PSYC 124 strongly recommended. Emphasis is on the principles of nervous system organization in the functioning of sensory inputs for object recognition and localization to the organization of central patterns of generation of sequenced motor output. Cross-listed with NSCS 127.

PSYC 129. Human Neuropsychology. (4) Lecture, three hours; discussion, one and one-half hours. Prerequisite(s): NSCS 106 or PSYC 110 or PSYC 132 or PSYC 134 or NSCS 135/PSYC 135 or consent of instructor. Surveys major psychological research that addresses the role of brain injury and injury in normal and abnormal behavior. Credit is awarded for only one of PSYC 129/L/PSYC 129 or PSYC 132.

PSYC 130. Fundamentals of Learning. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. The role of learning in normal and abnormal behavior. Topics include memory, attention, learning and memory, motivation, emotion, language, and abnormal behavior. Credit is awarded for only one of PSYC 130/L/PSYC 130 or PSYC 110.

PSYC 131. Perceptual Processes. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 011 and PSYC 140. The role of attention in normal and abnormal behavior. Topics include the role of attention in perception, memory, learning, and motivation. Credit is awarded for only one of PSYC 131/L/PSYC 131 or PSYC 141.

PSYC 132. Perception. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. The role of attention in normal and abnormal behavior. Topics include the role of attention in perception, memory, learning, and motivation. Credit is awarded for only one of PSYC 132/L/PSYC 132 or PSYC 142.

PSYC 133. Human Factors. (4) Lecture, three hours; extra reading, two hours; term paper, one hour. Prerequisite(s): PSYC 130 or PSYC 132 or PSYC 134 or consent of instructor. Provides an overview of the human capabilities and limitations considered in the design of person-machine systems. Factors critical to performance in person-machine systems, including attention, decision making, motor performance, and memory, are evaluated. Andersen.

PSYC 134. Cognitive Processes. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. An analysis of the role played by sensory mechanisms, experiences, expectations, and needs in recognizing objects in the environment.

PSYC 135. Psycholinguistics. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012; previous or concurrent enrollment in PSYC 011 or PSYC 012. An analysis of the role of language in normal and abnormal behavior. Topics include language acquisition and disorders, higher cerebral functions, and artificial intelligence and computer simulation of cognitive processes.

PSYC 139. Topics in Cognitive Psychology. (4) Seminar, three hours; extra reading and written work, three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012; previous or concurrent enrollment in PSYC 011 or PSYC 012. An analysis of the role of language in normal and abnormal behavior. Topics include language acquisition and disorders, higher cerebral functions, and artificial intelligence and computer simulation of cognitive processes.

PSYC 140. Social Psychology. (4) Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. An analysis of the role played by sensory mechanisms, experiences, expectations, and needs in recognizing objects in the environment.

PSYC 141. Nonverbal Communication in Human Social Interaction. (4) Lecture, three hours; term paper, three hours. Prerequisite(s): PSYC 011 and PSYC 140. The role of facial expressions, tone of voice, body movements, and proxemics in social interaction, including such topics as charisma, power cues, gender gestures, and the nonverbal detection of deception.
PSYC 142. Industrial/Organizational Psychology. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 002. Introduction to the field of industrial/organizational psychology covering fundamental theory and research in personnel and organizations. Topics include employee selection and training, performance appraisal, motivation, organizational dynamics, leadership, and job satisfaction. Cross-listed with BSAD 142.

PSYC 146. Primate Social Behavior. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ANTH 002 or ANTH 002H or PSYC 002. A consideration of social organization and behavior in monkeys and apes with emphasis on the adaptive aspects of social patterns and the relevance of primate studies to human evolution. Cross-listed with ANTH 146.

PSYC 148. Topics in Social Psychology. (4)
Lecture, three hours; extra reading, three hours; or term paper; three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012, PSYC 140; or equivalents; or consent of instructor. Intensive study of selected topics in social psychology such as social interactions, attitude formation and change, biases of social science researchers, and the application of psychological principles in community organization. Emphasis is on the study of these areas in natural settings. Specific course content varies. Course is repeatable to a maximum of 16 units.

PSYC 150. Personality. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 150; or equivalents; or consent of instructor. A survey of the principal theories of personality with attention to the experimental methods and findings on which they are based.

PSYC 152. Abnormal Psychology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. Introduction to the field of clinical psychology with an emphasis on the application and evaluation of techniques of individual and group counseling and therapy; the application and evaluation of psychological tests in the assessment of psychological problems.

PSYC 154. Philosophy of Psychology. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): one course in philosophy or upper-division standing in Psychology or consent of instructor. Examines philosophical issues arising in the context of empirical psychology. Topics may include moral development; artificial intelligence and the modeling of cognition; the nature of perception and memory; fallacies in human reasoning; mechanisms of self-understanding; and mental illness and personality. Cross-listed with PHIL 154.

PSYC 155. Personality Assessment. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012, PSYC 150; or equivalents; or consent of instructor. Covers the assessment of personality through self-report tests, projective tests, and systematic observations. Also entails descriptions of the psychometrics of testing as it applies to the problems in studying personality.

PSYC 158. Person Perception. (4)
Lecture, three hours; term paper; three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012, PSYC 140 or PSYC 150 (preferably both); or equivalents; or consent of instructor. "Person perception" refers to the impressions we have and the judgments we make about the personalities of ourselves and others. This course examines the topic from the viewpoints of both personality and social psychology. The course will focus on (1) the processes by which we all judge personality in our daily lives and (2) the way such judgments are erroneous and accurate.

PSYC 160. Developmental Psychology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. An overview of the developmental processes from the prenatal period to adulthood. Covers physical growth and development in the motor, perceptual, cognitive, emotional, social, and personality areas.

PSYC 161. Personality Development. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. Study of the development of human personality from birth through late adolescence. Emphasis is on the impact of interpersonal relationships on the acquisition of human traits, emotional reactions, and patterns of adjustment. Cross-listed with HMDV 161.

PSYC 162. Perceptual Development. (4)
Lecture, three hours; extra reading; three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. Study of the development of human personality from birth through late adolescence. Emphasis is on the impact of interpersonal relationships on the acquisition of human traits, emotional reactions, and patterns of adjustment. Cross-listed with HMDV 161.

PSYC 163. Cognitive Development. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; or equivalents; or consent of instructor. An analysis of the intellectual development of the child from birth to maturity. Mechanisms of intellectual growth, and the relationship between language development and cognitive development. Cross-listed with HMDV 163.

PSYC 164. Personality Development in Chicano Children. (4)
Lecture, three hours; extra reading; three hours. Prerequisite(s): PSYC 002. The affective and intellectual aspects of personality development as they pertain to the Chicano child will be extensively discussed and analyzed. The problems and rewards of an individual’s identification with two cultures will be examined in detail. Cross-listed with ETST 164 and HMDV 164.

PSYC 167. Psychological Development of Black Children. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 002. This course will analyze both the traditional theoretical approaches to the study of Black children and innovative approaches that are currently being developed by Black psychologists. The course will cover topics in the areas of cognitive, social, and personality development. Cross-listed with ETST 167.

PSYC 168. Psychological Aspects of the Black Experience. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 002. This course examines the interdependence between personal characteristics, Afro-American culture, and the social conditions which foster the Black experience. Group membership, life styles, role factors, and situational settings as social norms will be explored in order to understand the uniqueness of the Black experience. Cross-listed with ETST 168.

PSYC 169. Topics in Developmental Psychology. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): PSYC 001, PSYC 002, PSYC 011, PSYC 012 with grades of "C-" or better; PSYC 160; or equivalents; or consent of instructor. Intensive study in developmental psychology. Literature, methodology, experimental design and analysis is stressed. Specific course content varies. Course is repeatable to a maximum of 16 units.

PSYC 178. Health Psychology. (4)
Lecture, three hours; discussion; one hour. Prerequisite(s): BMSC 103 or PSYC 002 or SOC 001. An examination of the importance of interpersonal relationships to physical health and effective medical care. Social psychological perspectives are applied to such topics as stress-related diseases, placebo effects, doctor-patient interactions, dying, and the hospital environment.

PSYC 190. Special Studies. (1-5)
Prerequisite(s): upper-division standing with consent of instructor. Individual study under the direction of a faculty member. Course is repeatable to a maximum of 16 units.

PSYC 191A. Seminar in Developmental Psychology Research. (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Discussion of selected topics of research in developmental psychology. Some combination of readings, short written assignments, and oral presentation is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

PSYC 191B. Seminar in Neuroscience Research. (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Discussion of selected topics of research in neuroscience. Some combination of readings, short written assignments, and oral presentation is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

PSYC 191C. Seminar in Personality Psychology Research. (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Discussion of selected topics of research in personality psychology. Some combination of readings, short written assignments, and oral presentation is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

PSYC 191D. Seminar in Social Psychology Research. (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Discussion of selected topics of research in social psychology. Some combination of readings, short written assignments, and oral presentation is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.
PSYC 191E. Seminar in Cognitive Psychology Research. (2)
Seminar, two hours. Prerequisite(s): consent of instructor. Discussion of selected topics of research in cognitive psychology. Some combination of readings, short written assignments, and oral presentation is required. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

PSYC 192H. Junior Honors Seminar. (2)
Seminar, two hours. Prerequisite(s): junior standing in Psychology and admission to the Psychology Department Undergraduate Honors Program. Presentations by individual faculty members of their research programs; discussions of readings provided by faculty members; discussion of research conceptualization, design, methodology, and statistics; discussion of thesis-writing procedures; peer exchanges. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 6 units.

PSYC 193H. Senior Honors Seminar. (2)
Seminar, two hours. Prerequisite(s): senior standing in Psychology, admission to the Psychology Department Undergraduate Honors Program. Presentations by individual faculty members of their research programs; discussions of readings provided by faculty members; discussion of research conceptualization, design, methodology, and statistics; discussion of thesis-writing procedures; peer exchanges. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 12 units.

PSYC 194. Independent Reading. (1-4)
Prerequisite(s): upper-division standing with consent of instructor. Individual reading under faculty direction. Course is repeatable to a maximum of 4 units.

PSYC 195H. Senior Honors Thesis. (2)
Term paper, six hours. Prerequisite(s): senior standing in Psychology and admission to the Psychology Department Undergraduate Honors Program. The student will work independently with a faculty member preparing a thesis as a final phase of participation in the program. Satisfactory (S) or No Credit (NC) grading is not available.

PSYC 197. Research for Undergraduates. (1-4)
Individual research, three to twelve hours. Prerequisite(s): upper-division standing with consent of instructor. Directed original research. Graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned special projects. Course is repeatable.

PSYC 198G, Group Internship in Psychology. (2-5)
Lecture, one hour; internship, four to ten hours; written assignments, two to four hours. Prerequisite(s): PSYC 002 or consent of instructor. Supervised clinical experience in community settings such as mental health clinics, hospitals, and group homes. A written assignment such as a short research paper or a weekly journal is required. Enrollment is for 4 units; a rare exception may be made, in writing, by the instructor for 2, 3, or 5 units. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 12 units.

PSYC 199H. Junior Honors Research. (2)
Outside research, six hours. Prerequisite(s): junior standing in Psychology and admission to the Psychology Department Undergraduate Honors Program. Original research undertaken under the direction of individual faculty members. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 4 units.

PSYC 199H. Senior Honors Research. (1-5)
Outside research, three to fifteen hours. Prerequisite(s): open to senior Psychology majors by invitation. Original research undertaken, by invitation of faculty, under the direction of individual faculty members. Psychology Department Undergraduate Honors Program participants must enroll for 2 units each quarter of their senior year except for the thesis-writing quarter. Satisfactory (S) or No Credit (NC) grading is not available for Honors Program participants; other students may choose Satisfactory/No Credit grading. Course is repeatable to a maximum of 16 units.

GRADUATE COURSES

PSYC 200A-PSYC 200B-PSYC 200C. Fundamentals of Neuroscience. (3)
Lecture, three hours. Prerequisite(s): graduate standing or consent of instructor: NSRC 200A/PSYC 200A for 200B; NSRC 200B/PSYC 200B for 200C. The fundamentals of neuroscience in the areas of molecular and cellular mechanisms, neural and hormonal systems, and neural control of behavior. Cross-listed with NSRC 200A-NSRC 200B-NSRC 200C.

PSYC 203A-PSYC 203B-PSYC 203C. Experimental Psychology. (3-3-3) Year
Lecture, three hours. Prerequisite(s): graduate status or consent of instructor: 203A: Sensory and perceptual processes, paradigms, and problems. 203B: human and nonhuman learning paradigms and variables. 203C: learning and memory, information processing, attention, discrimination, and other choice behavior.

PSYC 207A. Theories in Developmental Psychology. (3)
Lecture, three hours. Prerequisite(s): consent of instructor. A consideration of major issues and theories in the area of developmental psychology. Theories to be covered include social learning theory, structural theories, sociobiology and theories of personality development. Topics include life span models and plasticity of human behavior.

PSYC 207B. Social Development. (3)
Lecture, three hours. Prerequisite(s): consent of instructor. Theoretical and empirical consideration of various topics in social development, including attachment, aggression, dependency, cooperation, and competition. Students will also consider methodological issues appropriate to investigations of these phenomena.

PSYC 207C. Processes of Cognitive Development. (3)
Lecture, three hours. Prerequisite(s): consent of instructor. Examine the cognitive changes in humans throughout the life cycle. Topics include Piagetian theory and memory, information processing, attention, and intelligence with a focus on the changes that occur in these skills.

PSYC 208. Research Methods in Development. (3)
Lecture, three hours. Prerequisite(s): consent of instructor. This course will develop students' skills in formulating appropriate research methodologies to solve developmental questions and in critically evaluating a variety of research methodologies currently in use. Topics include measurement of developmental dimensions and methods for assessing interrelations among developmental dimensions.

PSYC 211. Statistical Inference. (4)
Lecture, three hours; discussion, one hour; laboratory two hours. Prerequisite(s): graduate standing in Psychology or consent of instructor. Examines basic issues related to the application of statistical inference and significance tests to various research paradigms in psychology. Aspects of psychological measurement and the appropriateness of particular statistical techniques to different types of psychological data are discussed.

PSYC 212. Multiple Regression and Correlation Analysis. (4)
Lecture, three hours; discussion, one hour; laboratory, one hour. Prerequisite(s): graduate standing in Psychology, PSYC 211; or consent of instructor. Multiple regression, the general linear model, their relationship to analysis of variance, and extensions to multivariate analysis. The use of assorted computer statistical packages.

PSYC 213. Experimental Design and Analysis of Variance. (4)
Lecture, three hours; discussion, two hours. Prerequisite(s): graduate standing in Psychology, PSYC 212; or consent of instructor. Experimental design and analysis of variance including repeated measures and mixed designs, with special attention to exploratory data analysis. Honors Program, interactions, expected mean squares, and contrasts.

PSYC 223. Theories and Concepts of Social Psychology. (3)
Lecture, three hours. Prerequisite(s): consent of instructor. Advanced theories and concepts of social psychology. Special attention is given to the history and development of the major concepts of the field. Required of all social-personality graduate students.

PSYC 226. Theories and Concepts of Personality Psychology. (3)
Lecture, three hours. Prerequisite(s): consent of instructor. Advanced critical review of the theories, assessment techniques, and empirical literature in personality psychology. Special attention is given to the interactionist perspective. Required of all social-personality graduate students.

PSYC 227. Research Methods in Social Psychology. (3)
Lecture, three hours. Prerequisite(s): consent of instructor. Laboratory and field research methods with special attention to subject and experimenter artifacts and effects. Special issues include social research and publication and research ethics.

PSYC 228. Research Methods in Personality. (3)
Lecture, three hours. Prerequisite(s): graduate standing or consent of instructor. Methods of personality research with an emphasis upon the methods psychologists can use to assess personality. Attention to data analytic methods and theoretical content is included.

PSYC 252. Seminar in Cognitive Sciences. (2)
Seminar, two hours. Prerequisite(s): graduate status or consent of instructor. Analysis of selected current research in cognitive sciences. Research emphasizing cognitive approaches to problems in learning, memory, motivation, and perception, including developmental and comparative aspects of these problems, will be discussed. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 255. Seminar in Social Psychology. (3)
Seminar, three hours. Prerequisite(s): consent of instructor. Selected advanced topics in social psychology. The contents of these courses will vary. Graded Satisfactory (S) or No Credit (NC). Course may be repeated.

PSYC 256. Seminar in Perception. (3)
Seminar, three hours. Prerequisite(s): consent of instructor. Study and discussion of experimental papers in rela-
tion to the theory of perceptual processes. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 257. Seminar in Personality Psychology. (3) Seminar, three hours. Prerequisite(s): consent of instructor. Selected advanced topics in personality with an emphasis on experimental findings and theoretical interpretations. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 258. Seminar in Developmental Psychology. (3) Seminar, three hours. Prerequisite(s): consent of instructor. Selected advanced topics in developmental psychology. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 259. Seminar in Quantitative Methods. (3) Seminar, three hours. Prerequisite(s): graduate standing in Psychology or consent of instructor. A study of selected advanced topics in quantitative methods specifically for behavioral research, especially multivariate analysis. Content varies. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PSYC 263. Seminar in Physiological Psychology. (3) Seminar, three hours. Prerequisite(s): graduate standing or consent of instructor. Readings, oral reports, and discussions by students, faculty, and visiting scholars of selected areas in physiological psychology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 36 units.

PSYC 264. Current Research in Physiological Psychology. (2) Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. Review and discussion by students and faculty of contemporary research findings relevant to the on-going research area of one of the departmental faculty. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 36 units. Ashe, Stanley, Wilson

PSYC 265. Current Research in Developmental Psychology. (2) Seminar, two hours. Prerequisite(s): consent of instructor. Discussion of selected research topics in developmental psychology. Emphasis upon contemporary research findings relevant to the ongoing research area of one of the developmental faculty. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 270. Current Research in Quantitative Psychology. (2) Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. Discussion of selected research topics in quantitative psychology. Emphasis on contemporary research design and quantitative problems relevant to the on-going research areas of graduate students and faculty. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 16 units.

PSYC 271. Current Issues in Cognition. (3) Seminar, three hours. Prerequisite(s): consent of instructor. Current issues in memory, learning, and psychology. Emphasis is on recent and important experimental findings and on theoretical development. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 280. Current Research in Social Perception and Communication. (2) Seminar two hours. Prerequisite(s): consent of instructor. Analysis and discussion of ongoing research on face-to-face interaction, social perception, and nonverbal communication. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 282. Current Research in Personality Psychology. (2) Seminar, two hours. Prerequisite(s): consent of instructor. Discussion of selected research topics in personality psychology. Emphasis upon contemporary research findings relevant to the ongoing research area of one of the personality faculty. Graded Satisfactory (S) or No Credit (NC). May be repeated.

PSYC 287. Colloquium in Neuroscience. (1) Colloquium, one hour. Prerequisite(s): graduate standing or consent of instructor. Oral reports on current research topics in neuroscience with presentations by visiting scholars, faculty, and students. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 287, BIOL 287, BMSC 287, CHEM 287, and NSRC 287.

PSYC 289. Special Topics in Neuroscience. (2) Seminar, two hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) vary each time course is offered. Letter grades will be assigned to students presenting formal seminars; others will be graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with BCH 289, BIOL 289, BMSC 289, CHEM 289, ENTM 289, and NSRC 289.

PSYC 290. Directed Studies. (1-6) Prerequisite(s): consent of instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PSYC 291. Individual Study in Coordinated Areas. (1-6) Research, 3 to 18 hours. Prerequisite(s): graduate standing. A program of study designed to advise and assist candidates who are preparing for doctoral examinations. Graded Satisfactory (S) or No Credit (NC). May be repeated to a total of 18 units; units do not count toward the Master's Degree.

PSYC 292. Concurrent Analytical Studies. (1-4) Research, two to eight hours. Prerequisite(s): consent of instructor. Each 292 course will be taken concurrently with some 100-series course, but on an individual basis. It will be devoted to specific additional projects related to the 100-series course. Undergraduate evaluation will be provided through the quarter. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

PSYC 297. Directed Research. (1-6) Prerequisite(s): consent of instructor. Minor research studies or exploratory work toward the development of the dissertation problem. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PSYC 299. Research for Thesis or Dissertation. (1-12) Prerequisite(s): consent of instructor and department. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PSYC 301. Teaching Psychology at the College Level. (2) Seminar, one hour; practicum, three hours. Prerequisite(s): admission to graduate standing in Psychology. Teaching Assistant Development Program offered by the Teaching Assistant Development Office of the Graduate Division. Required prior to or concurrent with the student's first teaching assistant appointment. May be Waived by petition based on previous experience. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

RELIGIOUS STUDIES

Subject abbreviation: RLST

Ivan A. Strenski, Ph.D., Chair
Department Office, 1609 Humanities and Social Sciences; (999) 787-3612
http://www.ucr.edu/religious

Professors

Joel W. Martin, Ph.D. (Religious Studies/History)
Rupert Costo Chair in American Indian Affairs

June E. O’Connor, Ph.D.
Brian K. Smith, Ph.D.
Ivan A. Strenski, Ph.D. Holstein Family & Community Chair in Religious Studies

Professors Emeriti

Francis H. Cook, Ph.D.
Douglas M. Parrott, Ph.D.

Associate Professor

Vietan-Lee Nytrong, Ph.D. (Religious Studies/Comparative Literature and Foreign Languages)

MAJOR

The Department of Religious Studies provides an opportunity for students to gain a broad, cross-cultural perspective by studying the diverse religious traditions of the world. Religion has always played a crucial role in human history, thought, and culture and continues to do so today. Students are able to examine the texts, symbols, myths, rituals, ideas, values, and ethical systems of many religious traditions, such as Judaism, Christianity, Islam, Hinduism, Buddhism, African and Native American religions.

Holstein Family & Community Chair in Religious Studies

Of particular interest is the work of the Holstein Chair, which engages thought on the interactions of religions and cultures as these are manifested in cultural, social, ethical, and historical debates.

Majoring in Religious Studies can be an excellent preparation for living in a multicultural society and for a variety of careers, such as teaching, counseling, business, law, writing, the arts, and professional religious leadership. Religious Studies at UCR develops in students a number of valuable and transferable skills. These skills include disciplined attention to the facts (texts, ideas, history, behavior); critical reflection and analysis about claims of
meaning and value and about assumptions and methods used in the study of religion; and descriptive and analytical writing about religious history, ideas, motivations, practices, and ethical concerns. The study of religion enables students to become well informed and independent thinkers, prepared to engage in fact-finding research, to collect and organize ideas, and to analyze and make judgements which are required by any profession or position. A minor in Religious Studies is also available. Students are encouraged to consult with the Department Chair and other faculty about their questions and interests.

**Degree Requirements**

**University Requirements**

See the Undergraduate Studies Section for requirements that all students must satisfy.

**College Requirements**

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

**Major Requirements**

The major requirements for the B.A. degree in Religious Studies are as follows:

1. Lower-division requirements (12 units)
   a) RLST 005
   b) RLST 012/ETST 012
   c) One additional 4-unit course in Religious Studies or equivalent

2. Upper-division requirements (40 units)
   a) At least two courses from each of the following areas:
      (1) Eastern religions
      (2) Western religions
      (3) Themes in religions
   b) RLST 100 or RLST 102
   c) RLST 199 (Senior Tutorial)
   d) Eight (8) additional units from Religious Studies courses or relate courses in other programs or departments (A list of courses is available in the Religious Studies office, and other courses are considered with approval by the Chair.)

The programs of all majors should be developed in consultation with their advisors.

**Art History/Religious Studies Major**

The Art History/Religious Studies Major combines the disciplinary interest in the history of the visual arts with its related religious content and background. Three concentrations are offered. Students are expected to select one family of religions, either Asian or Western, and combine it with the study of the history of the visual arts in the corresponding area of artistic endeavor. Or, students wishing to combine Asian and Western materials to serve a comparative purpose are invited to design their own major in consultation with faculty representatives from both departments. Students are strongly encouraged to participate in the Education Abroad Program (EAP) and in internships abroad. Students in this major will be well prepared for graduate studies in either art history or religious studies.

**Major Requirements**

The major requirements for the B.A. degree in Art History/Religious Studies are as follows:

1. Lower division requirements (16 units)
   a) Art History (12 units): AHS 015, AHS 017A, AHS 017B, AHS 017C
   b) Religious Studies (4 units) choose from: RLST 007, RLST 010

2. Upper division requirements (36 units)
   a) Art History (16 units) choose from: AHS 155, AHS 156, AHS 157, AHS 159, AHS 161, AHS 162, AHS 163, AHS 164, AHS 171, AHS 172
   b) Religious Studies (20 units) choose from: RLST 100, RLST 111, RLST 121, RLST 128 (E-Z), RLST 130, RLST 131, RLST 135/HISE 130, RLST 136, RLST 171, RLST 172

3. Optional 190 level work in either Art History or Religious Studies

Note: Students are responsible for satisfying all prerequisites for upper division courses (please see catalog for prerequisite information).

**Student-designed Comparative Concentration (52 units)**

1. Lower division requirements (12 units)
   a) Art History, choose at least 4 units: AHS 015, AHS 017A, AHS 017B, AHS 017C, AST 030/CHN 030
   b) Religious Studies, choose at least 4 units: RLST 005, RLST 007, RLST 010

2. Upper division requirements (40 units)
   a) Art History, choose at least 12 units: AHS 140, AHS 141, AHS 143, AHS 155, AHS 156, AHS 157, AHS 159, AHS 161, AHS 162, AHS 163, AHS 164, AHS 171, AHS 172, CPLT 141
   b) Religious Studies, choose at least 12 units: RLST 100, RLST 101, RLST 103, RLST 105, RLST 106, RLST 111, RLST 121, RLST 128 (E-Z), RLST 130, RLST 131, RLST 135/HISE 130, RLST 136, RLST 142/AST 142/CHN 142, RLST 144/CPLT 144, RLST 171, RLST 172

3. Optional 190 level work in either Art History or Religious Studies

Note: Students are responsible for satisfying all prerequisites for upper division courses (please see catalog for prerequisite information).

**Minor**

Requirements for a minor in Religious Studies are as follows:

1. Lower-division requirements (12 units)
   a) RLST 005
   b) RLST 012/ETST 012
   c) One additional 4-unit course in Religious Studies
2. Upper-division requirements (16 units)
   a) Twelve (12) units consisting of one course from each of the following three areas:
      (1) Eastern religions
      (2) Western religions
      (3) Themes in religions
   b) Four (4) upper-division units from those courses approved for the Religious Studies major

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Education Abroad Program

The Religious Studies Department encourages students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units toward graduation. Because strategy in choosing courses to be taken here and courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult the department advisor for assistance.

For further details, see Education Abroad Program under International Services Center in the Student Services section of this catalog.

A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

Accelerated M.A. Program at Claremont Graduate School

An accelerated Master of Arts Program in Religion is available at the Claremont Graduate School for qualifying UCR Religious Studies majors. The program enables those accepted to complete the M.A. in religion at the nearby Claremont Graduate School with no more than a year of study after receiving the B.A. degree at UCR. Students accepted are able to enter the CSS M.A. program in their senior year and have up to 8 UCR upper-division quarter units counted toward the M.A. At the same time, up to 8 CSS semester units may be credited toward the completion of both the UCR B.A. and the CSS M.A. programs. Further details are available in the Religious Studies Office.

LOW- DIVISION COURSES

RLST 005. Introduction to Asian Religions. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. A survey of the major Asian religions such as Hinduism, Buddhism, Confucianism, Taoism, and Shinto, with particular emphasis on thought structures, practices, and ethics. Readings in basic texts of the traditions. Credit is awarded for only one of RLST 005 or RLST 005H.

RLST 005H. Honors Introduction to Asian Religions. (4)
Lecture, three hours; discussion, one hour; extra reading, three hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. An introduction to the major Asian religious traditions such as Hinduism, Buddhism, Confucianism, Taoism, and Shinto, with particular emphasis on thought structures, practices, and ethics. Readings in basic texts of the traditions. Credit is awarded for only one of RLST 005 or RLST 005H.

RLST 007. Introduction to Western Religions. (4)
Lecture, three hours; field, three hours. Prerequisite(s): none. An introductory survey of Judaism, Christianity, and Islam. Emphasis is placed on distinguishing characteristics, major ceremonies, foundation texts, and historical interactions. Students have opportunities to hear and question representatives of various branches and visit services.

RLST 010. Introduction to the Bible. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. A preparation for informed study of the Bible. Examines contemporary interpretive stances, history, methods, and major themes. Significant portions of the Bible are studied in the process.

RLST 012. Religious Myths and Rituals. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to the meanings, origins, and functions of religion, the roles of myths, rituals, and symbols; and images of transcendence. Religious beliefs and expressions are examined from diverse cultural perspectives. Source materials are drawn from indigenous Native (North and South) American, African American, and/or Asian American traditions. Cross-listed with ETST 012. Credit is awarded for only one of ETST 012/RLST 012 or ETST 012H/RLST 012H.

RLST 012H. Honors Religious Myths and Rituals. (4)
Lecture, three hours; discussion, one hour; extra reading, three hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. An introduction to the meanings, origins, and functions of religion, the roles of myths, rituals, and symbols; and images of transcendence. Religious beliefs and expressions are examined from diverse cultural perspectives. Source materials are drawn from indigenous Native (North and South) American, African American, and/or Asian American traditions. Cross-listed with ETST 012H. Credit is awarded for only one of ETST 012/RLST 012 or ETST 012H/RLST 012H.

RLST 014. Religion and Science. (4)
Lecture, three hours; discussion, one hour. Introduction to major themes in the relation of science and religion. Primary focus is on conflicts between Western religious traditions and science, but attention is also paid to particular problems encountered by Buddhism and Hinduism. Topics include creationism and Darwinian evolution; modern cosmology and the significance of earthly life; and the trial of Galileo. Explores modern mediations on the possibility of new religious meaning in a scientific cosmos through the study of contemporary science fiction and film.

RLST 015. Death. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. Investigates the physiological aspects of facing death and dealing with dying persons; cross-cultural religious and philosophical interpretations of death (as new life, resurrection, rebirth, etc.); and medical, ethical, and legal issues such as physician-assisted suicide and euthanasia. Credit is awarded for only one of RLST 015 or RLST 015H.

RLST 015H. Honors Death. (4)
Seminar, three hours; individual research, three hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to RLST 015. An examination of three sets of issues pertaining to death and dying: psychological and experiential aspects of facing medical crisis, illness, death, and grief; cross-cultural perspectives on the ways in which death is conceived in selected religions of the world with respect to life and claims about afterlife; public policy issues that involve ethical, legal, and medical concerns regarding euthanasia, physician-assisted suicide, and hospice alternatives. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of RLST 015 and RLST 015H.

RLST 044. Gods, Ghosts, and Grandparents. (4)
Lecture, three hours; discussion, one hour. Considers some of the different ways the Chinese regarded— and still regard— gods, ghosts, and ancestors. Nearly all the readings are primary sources spanning almost four thousand years of Chinese history and include texts on oracle bones, philosophical arguments for and against the existence of spirits, tomb contracts for the dead, a sutra promoting the goddess Guanyin as Giver of Sons; ghost stories, and eyewitness accounts of funeral rituals. Cross-listed with HIST 044.

UPPER-DIVISION COURSES

RLST 100. The Problem of Religion. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): one Religious Studies course or upper-division standing or consent of instructor. Survey of critics and defenders of religion who debate meanings and functions of religions in light of modern challenges. Topics include religious pluralism due to cross-cultural encounters in Africa, Asia, and the Americas; wars among religions; theories of evolution; discovery of the unconscious; rise of behavioral and social sciences.

RLST 101. Religions of India. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): one lower-division course in Religious Studies or consent of instructor. An examination of the major religious traditions in India with special emphasis on Hinduism and Buddhism.

RLST 102. Contemporary Themes in Religion and Theory. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of contemporary cultural issues which pose challenges to the nature of religion and the way it is studied in the public university. Issues discussed include race, gender, power, colonialism, and religious commitment.

RLST 103. Confucianism. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): AST 030/CHN 030 or RLST 065 or RLST 005H or upper-division standing or consent of instructor. A study of Confucian thought and practice. Special attention is given to the classical cultivation of virture and ritual practice, the historical spread of the tradition beyond China, and contemporary issues such as gender and human rights.
RLST 105. Religions of Japan. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): one lower-division course in Religious Studies or consent of instructor. An examination of the major religious traditions in Japan with special emphasis on Shinto and Japanese Buddhism.

RLST 106. Buddhism. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AST 030/CHN 030 or upper-division standing or consent of instructor. Aspects of the history and development of Buddhism in its major forms (Theravada, Mahayana, and Vajrayana). Studies of principal sutras, biographies, ethical treatises, birth narratives, and poetry.

RLST 107. Taoist Traditions. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): AST 030/CHN 030 or upper-division standing or consent of instructor. A survey of the ancient mystical and philosophical aspects of Taoism as well as the living religious tradition, their relationships to each other, and their expression in Chinese culture and civilization. Topics include the Tao Te Ching, the Chuang-tzu, the Taoist Canon, meditation, immortality, alchemy, and ritual. Cross-listed with AST 107 and CHN 107.

RLST 108. Modern Hinduism. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): AST 030/CHN 030 or upper-division standing or consent of instructor. An overview of Islam from the time of the Prophet to modern times, including the influence of colonialism and nationalism on Hinduism, the rise of neo-Hindu movements, modern Hindu "fundamentalism," and Hinduism in the modern Western world.

RLST 109. New Religious Movements. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the contexts in which new religions emerge, their relations with dominant religious traditions or normative cultures, and the religious content of such movements. In addition, students will examine the "cultural" versus "religion" debate; apocalyptic, eschatological, and millenarian views of the world; the nature of charismatic leadership; regional patterns; and transnational trends.

RLST 111. Islam. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of Islam from the time of Muhammad (d. 632 A.D.) to the present. Attention is given to its distinctive beliefs and practices, its influence upon societies in which it became dominant, and its interaction with other traditions.

RLST 112. Islam and the West. (4) S Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of Islamic literature from the perspective of a special eye towards critically examining stereotypes. Select topics such as the media, immigration, and politics as salient factors in the construction of the relationship between Islam and the West are addressed.

RLST 113. Topics in Modern Islam. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of issues facing Islam in the modern world such as Islam’s engagement with and reaction to nationalism, feminism, the status of sacred texts in the face of critical historical and philological studies, science, and technology.

RLST 115. Religious Fundamentalism. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of the worldwide "fundamentalist" movement of the nineteenth and twentieth centuries, concentrating on materials from Protestant Christianity in America, Islam in the Middle East, Hinduism in India, and Judaism in Israel.

RLST 116. Religion and Violence. (4) Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis and survey of religion as a category of violence. Topics include first-hand experience of religious violence and violence in India, Northern Ireland, Egypt, Lebanon, Israel, Palestine, Sri Lanka, and the United States.

RLST 117. Mythology. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative study of mythic traditions from several world cultures and religions viewed from a variety of theoretical perspectives. Includes material drawn from epic, religious texts, divine hymns, creation myths, heroic legends, and concepts of the afterlife as reflected in literary and nonliterary sources. Cross-listed with CLA 112 and WRIT 112.

RLST 119. Sacrifice. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. An analysis and survey of sacrifice as a category of ritual and as a concept with broad application. Materials are drawn from a wide range of Eastern and Western religious sources, both ancient and modern.

RLST 121. The Hebrew Bible/Old Testament. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of the collection of books usually called the Old Testament by Christians and the Bible by Jews (the acronym T’NCH is often used by Jews as well). The books are examined in their historical, cultural, and religious contexts, with attention to the methods of modern literary criticism.

RLST 124 (E-Z). Studies in Judaism from 70 C.E. to Modern Period. (4) Lecture, three hours; reading and consultation, one hour. Exploration of developments in Judaism during this period, such as the collection of the Mishna, the development of the Talmud, Jewish Gnosticism, the medieval philosophers, Hasidism, the Reform, Orthodox and Conservative movements.

RLST 128 (E-Z). Topics in the Bible. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. Academic examination of issues relating to the Bible. Consult the Department for a list of topics. Examples include the social world of the Bible; the contemporary examination of the sources of the Gospels; the Bible and women; Hebrew law in the Bible; the Bible and contemporary moral issues.

RLST 130. The Bible: New Testament. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the literature and history of the early Christian movement. Attention is given to New Testament materials and apocryphal writings.

RLST 131. Jesus. (4) Lecture, three hours. A quest after the historical Jesus, using the methods of modern scholarship, and including a review of those who have dealt with the problem from Reimarus (Eighteenth Century) to the present.

RLST 135. History of Christianity. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. A study of Christianity from its origins to the seventeenth century with historical emphasis determined by faculty expertise. Cross-listed with HISE 130.

RLST 136. Augustine and Aquinas. (4) Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Examination of selected writings by and about Augustine of Hippo (354-430) and Thomas Aquinas (1226-1274), whose works have had a major impact on Western religious, literary, and historical themes. Addressed include the search for wisdom, the nature of happiness, what constitutes a good life, the nature of freedom and the source of evil, the existence of God, the relationships between faith and reason, the power and limits of language.

RLST 137A-RLST 137B. History of Religion in America. (4-4) Lecture, three hours; term paper, three hours. Prerequisite(s): AST 107 or AST 055 or AST 105/CHN 107 or AST 105/CHN 107/RLST 107 or consent of instructor. A historical account of the religious motivations in the exploration and colonization of America, followed by an examination of religion's role in the expansion of the West, together with attention to nineteenth- and twentieth-century religious movements and ideas. Cross-listed with HISA 122A-HISA 122B.

RLST 138. Colonialism and Religions in Mexico. (4) Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. The survival, revival, and invention of religious traditions in ancient and contemporary Mesoamerica. Indigenous and immigrant religions are examined through a variety of themes: myths and rituals of pre-Columbian peoples; sexuality and eroticism in religion; Indian theology and theo-geography; Counter Reformation Catholicism; growing religious syncretisms.

RLST 142. Chuang-tzu. (4) Lecture, one hour; discussion, two hours; outside research, one hour; extra reading, one hour; term paper, one hour. Prerequisite(s): RLST 005 or RLST 055H or AST 107/CHN 107/RLST 107 or consent of instructor. An examination of classical Chinese Taoist texts, the Chuang-tzu. Discussion of the structure and style of this literary masterpiece. Students with knowledge of classical Chinese may arrange additional work through special studies. Cross-listed with AST 142 and CHN 142.

RLST 144. Buddhist Literature. (4) Lecture, two hours; discussion, one hour; term paper, three hours. Prerequisite(s): RLST 005 or RLST 055H or AST 107/CHN 107/RLST 107 or consent of instructor. Readings in canonical Buddhist narratives and examination of the themes of emptiness and impermanence in Buddhist-inspired literature. Examples are drawn from classical and modern Asian prose and poetry as well as from the work of contemporary American authors. Cross-listed with CPT 144.
RLST 176. Religion and Film. (4)
Lecture, three hours; screening, three hours.
Prerequisite(s): upper-division standing or consent of instructor.
Examines the intersections of film, religious meaning, and contemporary society.

RLST 177. Religion and the Biographical Image. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): upper-division standing or consent of instructor. A study of the construction and continuing appropriation of biographical images (textual and visual narratives) in selected religious traditions. Special attention to problems of interpretation and the medium of presentation in the communication of "religious" meaning.

RLST 178. Religion and the Biographical Image. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): upper-division standing or consent of instructor: A study of the construction and continuing appropriation of biographical images (textual and visual narratives) in selected religious traditions. Special attention to problems of interpretation and the medium of presentation in the communication of "religious" meaning.

RLST 179. Special Studies. (1-5)
To be taken with consent of the chair of the program to meet special curricular problems.

RLST 191 (E-Z). Seminar in Religious Studies. (4)
Special seminars, normally interdisciplinary in character, whose topics together with their critics, are examined.

RLST 192. Individualism in Comparative Perspectivetive. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): upper-division standing or consent of instructor. The emergence of the individual as a sacred being in the West, studied in comparison with notions of the human person characteristic of traditional Confucianism, Hinduism, and Shinto as well as the more recent case of Maoist thought in modern China. Buddhism as an indigenous Asian individualism.

RLST 193. Religion and Human Rights. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): upper-division standing or consent of instructor: An examination of selected human rights struggles with particular attention given to the role of religion. Case examples are taken from North and Latin America, South Africa, South Asia, or China, among others.

RLST 194. Contemporary Christian Theologies. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): upper-division standing or consent of instructor: A study of contemporary Christian theologies and schools of thought in the context of history and society. In addition to selected thinkers, the following movements are studied: orthodoxy, neoorthodoxy, Christian existentialism, evangelical, eucumenical, secular, process, liberation, and feminist theologies.

RLST 195. Senior Thesis. (1-4)
Practicum, three to twelve hours. Prerequisite(s) — appointment as a Teaching Assistant; graduate standing. Supervised teaching in lower- and upper-division Religious Studies courses. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

RLST 196. Liberation Theologies. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): upper-division standing or consent of instructor: Examination of a literature that addresses and assesses global inequities and that emerges from religious communities in the Americas, Asia, and Africa. National and international voices that raise questions about cross-cultural interdependencies, poverty and wealth, oppression and liberation, justice and domination, the uses and abuses of power, and the many functions of religion, together with their critics, are examined.

RLST 197. Research for Undergraduates. (4)
Individual research, three to six hours. Prerequisite(s): upper-division standing or consent of instructor. Directed individual research. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable to a maximum of 4 units.

RLST 198. Research for Undergraduates. (4)
Individual research, three to six hours. Prerequisite(s): upper-division standing or consent of instructor. Directed individual research. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination. Course is repeatable to a maximum of 4 units.

RLST 199. Senior Research. (4)
Outside research, nine hours; consultation, one hour.
Prerequisite(s): senior standing or consent of instructor. Individual research in religious studies. In consultation with faculty, students design a research project in light of previous research, course work, and questions. Students meet regularly as a group with instructor to discuss differing kinds of data studied by scholars of religion and to address differing methodological approaches. In the group forum, they also present their work in progress.

PROFESSIONAL COURSE

RLST 302. Teaching Practicum. (1-4)
Practicum, three to twelve hours. Prerequisite(s): appointment as a Teaching Assistant; graduate standing.

RELATED COURSES

ANTH 124. Ritual and Religion. (4)
Description under Anthropology.

AHS 155. Early Christian Art. (4)
Description under Art History.

AHS 156. Early Medieval Art (4)
Description under Art History.

CLA 165. Greco-Roman Cults and Credence. (4)
Description under Classics.

ENGL 100E. Bible as Literature. (4)
Description under English.

HISE 132. The Reformation. (4)
Description under History.

PHIL 164. Philosophy of Religion. (4)
Description under Philosophy.

SOC 158. The Sociology of Religion. (4)
Description under Sociology.

SOCIAL RELATIONS

Masako Ishii-Kuntz, Ph.D., Chair
Program Office, 1216 W Atkins Hall
(909) 787-2854

Committee in Charge
Scott L. Coltrane, Ph.D. (Sociology)
Michael Kearney, Ph.D. (Anthropology)
Patricia O’Brien, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

MAJOR

The major in Social Relations offers an integrated approach to the study of personality in society and culture. It provides a background in the theoretical and methodological contributions of anthropology, psychology, and soci-
ology to those students whose future professional careers require a broad understanding of human behavior and social relationships.

In the Social Relations major, the student can choose to work toward either a Bachelor of Arts degree or a Bachelor of Science degree. The Bachelor of Arts degree is most suitable for students who intend to enter one of the social service professions. The Bachelor of Science degree has a stronger emphasis on the acquisition of research skills. Students should work out a course of study in consultation with their advisors. Majors planning to enter graduate work in anthropology, psychology, or sociology are strongly advised to consult with the appropriate department regarding how best to prepare themselves.

All students are required to meet quarterly with the Program Advisor for counseling and consultation for purposes of developing a program of studies prior to course enrollment.

**Degree Requirements**

**University Requirements**

See the Undergraduate Studies section for requirements that all students must satisfy.

**College Requirements**

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

**Major Requirements**

The major requirements for the B.A. and B.S. degrees in Social Relations are as follows:

**For the Bachelor of Arts**

Lower-division requirements (12 units)

1. ANTH 001
2. PSYC 002
3. SOC 001

Upper-division requirements (52 units)

1. Four (4) units in research methods, chosen from the following courses: ANTH 175A-ANTH 175B-ANTH 175C; PSYC 012; SOC 110A
2. Four (4) units in statistics: PSYC 011 or SOC 110B
3. Thirty-six (36) elective units chosen from the following, including at least two courses in each of the areas of Anthropology, Psychology, and Sociology:
   a) ANTH 104, ANTH 106, ANTH 107, ANTH 120, ANTH 124, ANTH 125, ANTH 127, ANTH 131, ANTH 132, ANTH 133, ANTH 162, ANTH 165
   b) PSYC 140, PSYC 141, PSYC 148, PSYC 150, PSYC 152, PSYC 153, PSYC 158, PSYC 161/HMDV 161, PSYC 164/HMDV 164/ETST 164, PSYC 167/ETST 167, PSYC 168/ETST 168, PSYC 169, PSYC 178
   c) SOC 123, SOC 124, SOC 127, SOC 128/ETST 128, SOC 129, SOC 130, SOC 136, SOC 140, SOC 141, SOC 142, SOC 144, SOC 146, SOC 147, SOC 157, SOC 162, SOC 165/ETST 165, SOC 173, SOC 174/HMDV 174, SOC 175, SOC 177 (E-Z), SOC 180, SOC 183H
4. Eight (8) units from PSYC 198G or SOC 198G or SOC 198-I taken only after completion of requirements (1) and (2) above

**For the Bachelor of Science**

Lower-division requirements (16 units)

1. ANTH 001
2. PSYC 001, PSYC 002
3. SOC 001

Upper-division requirements (60 units)

1. Twelve (12) units in research methods, chosen from the following courses: ANTH 175A-ANTH 175B-ANTH 175C; PSYC 012; SOC 110A
2. Four (4) units in statistics: PSYC 011 or SOC 110B
3. Thirty-six (36) elective units chosen from the following, including at least two courses in each of the areas of Anthropology, Psychology, and Sociology:
   a) ANTH 104, ANTH 106, ANTH 107, ANTH 120, ANTH 124, ANTH 125, ANTH 127, ANTH 131, ANTH 132, ANTH 133, ANTH 162, ANTH 165
   b) PSYC 140, PSYC 141, PSYC 148, PSYC 150, PSYC 152, PSYC 153, PSYC 158, PSYC 161/HMDV 161, PSYC 164/HMDV 164/ETST 164, PSYC 167/ETST 167, PSYC 168/ETST 168, PSYC 169, PSYC 178
   c) SOC 123, SOC 124, SOC 127, SOC 128/ETST 128, SOC 129, SOC 130, SOC 136, SOC 140, SOC 141, SOC 142, SOC 144, SOC 146, SOC 147, SOC 157, SOC 162, SOC 165/ETST 165, SOC 173, SOC 174/HMDV 174, SOC 175, SOC 177 (E-Z), SOC 180, SOC 183H
4. Eight (8) units from PSYC 198G or SOC 198G or SOC 198-I taken only after completion of requirements (1) and (2) above

**SOCILOGY**

**Subject abbreviation: SOC**

Scott L. Coltrane, Chair
Department Office, 1203 Watkins Hall
(909) 787-3501
http://wizard.ucr.edu/sociology

**Professors**

Adalberto Aguirre, Jr., Ph.D.
Edna M. Bonacich, Ph.D.
(Sociology/Ethnic Studies)
Steven G. Britz, Ph.D.
Robert A. Hanneman, Ph.D.
Alfredo M. Mirandé, Ph.D.
(Sociology/Ethnic Studies)
Robert Nash Parker, Ph.D.
Raymond L. Russell, III, Ph.D.
Linda Brewster Sears, Ph.D.
Austen T. Turk, Ph.D.
Jonathan H. Turner, Ph.D.
Kirk R. Williams, Ph.D.

**Professors Emeriti**

Edgar W. Butler, Ph.D.
Jane R. Mercer, Ph.D.

**Associate Professors**

Scott L. Coltrane, Ph.D.
Masako Ishii-Kuntz, Ph.D.
Augustine Kposowa, Ph.D.
Alexandra Maryanski, Ph.D.

**Assistant Professors**

Karen D. Pyke, Ph.D.
Ellen Reese, Ph.D.

**MAJORS**

Sociology is the scientific study of human behavior, interaction and organization. It provides a historical and comparative perspective on human societies and offers a framework for understanding society and the complex social world.

**Career Opportunities**

A sociology major provides opportunities for a variety of career choices that require only the Bachelor of Science or the Bachelor of Arts degree. It is highly recommended for careers in administration, urban planning, public relations, journalism, marketing research, communication, social welfare, police and law enforcement, government, management, business, and any career that requires an understanding of human behavior and organization within the social environment of modern corporate America. A sociology major also provides an excellent foundation for such professions as teaching, counseling, law and medicine and for advanced degrees in sociology and related disciplines.

Students majoring in sociology can choose between a B.S. or B.A. degree. The department
also offers majors in Sociology/Administrative Studies, and Sociology/Law & Society, as well as a minor in sociology. All students are required to meet quarterly prior to course enrollment with the Student Affairs Officer and the Undergraduate Advisor to develop a program of studies.

**Degree Requirements**

**University Requirements**

See the Undergraduate Studies section for requirements that all students must satisfy.

**College Requirements**

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

**Major Requirements**

**Sociology Major**

The major requirements for the B.A. and B.S. degrees in Sociology are as follows:

**For the Bachelor of Arts**
1. Lower-division requirements (8 units)
   a) SOC 001
   b) One additional lower-division Sociology course
2. Upper-division requirements (44 units)
   a) SOC 109, SOC 110A, SOC 110B, SOC 110C, SOC 168, SOC 169
   b) A minimum of one course each selected from four of the following six areas of emphasis:
      (1) Social Organizations:
      SOC 150/BSAD 150, SOC 151/BSAD 151, SOC 171, SOC 176/BSAD 176
      (2) Social Psychology: SOC 173, SOC 174/HMDV 174, SOC 175, SOC 177E
      (3) Social Inequality: SOC 129, SOC 130, SOC 133, SOC 135, SOC 140
      (4) Urban Sociology: SOC 137, SOC 143/URST 143, SOC 182/HMDV 182/URST 182
      (5) Criminology and Deviance:
      SOC 124, SOC 144, SOC 146, SOC 147, SOC 149, SOC 159, SOC 180
      (6) Social Institutions and Change:
      SOC 122, SOC 123, SOC 139/FVC 139, SOC 142, SOC 158, SOC 160/HMDV 160, SOC 183G
   c) An additional 16 elective units in Sociology (No more than 4 units may be in any combination of SOC 190, SOC 197, SOC 198-G, SOC 198-I)

**Sociology/Administrative Studies Major**

The major requirements for the B.A. and the B.S. degree in Sociology/Administrative Studies are as follows:

**For the Bachelor of Arts**
Sociology Department requirements (52 units)
1. Lower-division requirements
   a) SOC 001
   b) One additional lower-division Sociology course
2. Upper-division requirements
   a) SOC 110A, SOC 110B and either SOC 168 or SOC 169
   b) A minimum of one course each selected from four of the following six areas of emphasis:
      (1) Social Organizations:
      SOC 150/BSAD 150, SOC 151/BSAD 151, SOC 171, SOC 176/BSAD 176
      (2) Social Psychology: SOC 173, SOC 174/HMDV 174, SOC 175, SOC 177E
      (3) Social Inequality: SOC 129, SOC 130, SOC 133, SOC 135, SOC 140
      (4) Urban Sociology: SOC 137, SOC 143/URST 143, SOC 182/HMDV 182/URST 182
      (5) Criminology and Deviance:
      SOC 124, SOC 144, SOC 146, SOC 147, SOC 149, SOC 159, SOC 180
      (6) Social Institutions and Change:
      SOC 122, SOC 123, SOC 139/FVC 139, SOC 142, SOC 158, SOC 160/HMDV 160, SOC 183G
   c) An additional 16 elective units in Sociology (No more than 4 units may be in any combination of SOC 190, SOC 197, SOC 198-G, SOC 198-I).

Requirements for Administrative Studies (37 units)
1. Lower-division courses (17 units)
   a) BSAD 010 and BSAD 020A
   b) STAT 048 or equivalent (may be used to satisfy breadth requirements)
   c) CS 008 (may be used to satisfy breadth requirements)
2. Upper-division requirements
   a) Two courses (8 units) from the list below:
      (1) ECON 102A or ECON 130 or ECON 162/BSAD 162
      (2) PSYC 140 or PSYC 142/BSAD 142
      (3) SOC 150/BSAD 150, or SOC 151/BSAD 151, or SOC 171
      (4) POSC 181 or POSC 182/BSAD 182 or POSC 183
      (5) ANTH 127 or ANTH 131
   b) A three-course track (12 units) in Business Administration courses included as part of the three course Business Administration track or their cross-listed equivalents.
   c) A three-course track (12 units) in Business Administration courses from one of the following:
(1) Organizations (General): BSAD 105/ANTH 105, BSAD 150/ SOC 150, BSAD 151/SOC 151, BSAD 176/SOC 176

(2) Human Resources Management/Labor Relations: BSAD 142/PSYC 142, BSAD 152/ECON 152, BSAD 153/ECON 153, BSAD 155, BSAD 157

(3) Business and Society: BSAD 116/PHIL 116, BSAD 161, BSAD 182/POS C 182, BSAD 186/POS C 186

(4) Marketing: BSAD 110, and two from BSAD 112, BSAD 113, BSAD 114, BSAD 117

(5) Managerial Accounting/Taxation: BSAD 163, and two from BSAD 166, BSAD 168, BSAD 168B

(6) Financial Accounting: BSAD 163, BSAD 165A, BSAD 165B

(7) Finance: BSAD 134/ECON 134 and two from BSAD 135A, BSAD 136, BSAD 137, BSAD 138, BSAD 139

(8) Management Information Systems: BSAD 170, BSAD 171, BSAD 173

(9) Production Management: BSAD 121/STAT 121, and two from BSAD 122, BSAD 126, BSAD 127/STAT 127

Note: In filling the dual requirements of the selected major, students may not count more than two courses toward both parts of their total requirements (Sociology requirements and Administrative Studies requirements).

For the Bachelor of Science

Sociology Department requirements (64 units)

1. Lower-division requirements
   a) SOC 001
   b) One additional lower-division Sociology course

2. Upper-division requirements
   a) SOC 109, SOC 110A, SOC 110B, SOC 110C, SOC 168, SOC 169
   b) A minimum of one course each selected from four of the following six areas of emphasis:
      (1) Social Organizations: SOC 150/BSAD 150, SOC 151/BSAD 151, SOC 171, SOC 176/BSAD 176
      (2) Social Psychology: SOC 173, SOC 174/HMDV 174, SOC 175, SOC 177E
      (3) Social Inequality: SOC 129, SOC 130, SOC 133, SOC 135, SOC 140
      (4) Urban Sociology: SOC 137, SOC 143/URST 143, SOC 182/HMDV 182/URST 182
      (5) Criminology and Deviance: SOC 124, SOC 144, SOC 146, SOC 147, SOC 149, SOC 159, SOC 180
      (6) Social Institutions and Change: SOC 122, SOC 123, SOC 139, SOC 139/ FVC 139, SOC 142, SOC 158, SOC 160/HMDV 160, SOC 183G
   c) An additional 16 elective units in Sociology (No more than 4 units may be in any combination of SOC 190, SOC 197, SOC 198G, SOC 198-L)

Requirements for Administrative Studies (37 units)

1. Lower-division courses (17 units)
   a) BSAD 010 and BSAD 020A
   b) STAT 048 or equivalent (may be used to satisfy breadth requirements)
   c) CS 008 (may be used to satisfy breadth requirements)

2. Upper-division requirements
   a) Two courses (8 units) from the list below:
      (1) ECON 102A or ECON 130 or ECON 162/BSAD 162
      (2) PSYC 140 or PSYC 142/BSAD 142
      (3) SOC 150/BSAD 150, SOC 151/BSAD 151, or SOC 171
      (4) POSC 181 or POSC 182/BSAD 182 or POSC 183
      (5) ANTH 127 or ANTH 131
   These two courses must be outside the discipline of the cooperating major and cannot be courses included as part of the three course Business Administration track or their cross-listed equivalents.
   b) A three-course track (12 units) in Business Administration courses from one of the following:
      (1) Organizations (General): BSAD 105/ANTH 105, BSAD 150/ SOC 150, BSAD 151/SOC 151, BSAD 176/SOC 176
      (2) Human Resources Management/Labor Relations: BSAD 142/PSYC 142, BSAD 152/ECON 152, BSAD 153/ECON 153, BSAD 155, BSAD 157
      (3) Business and Society: BSAD 161, BSAD 182/POS C 182, BSAD 186/POS C 186
      (4) Marketing: BSAD 110, and two from BSAD 112, BSAD 113, BSAD 114, BSAD 117
      (5) Managerial Accounting/Taxation: BSAD 163, and two from BSAD 166, BSAD 168A, BSAD 168B
      (6) Financial Accounting: BSAD 163, BSAD 165A, BSAD 165B
      (7) Finance: BSAD 134/ECON 134 and two from BSAD 135A, BSAD 136, BSAD 137, BSAD 138, BSAD 139
      (8) Management Information Systems: BSAD 170, BSAD 171, BSAD 173
      (9) Production Management: BSAD 121/STAT 121, and two from BSAD 122, BSAD 126, BSAD 127/STAT 127

Note: In filling the dual requirements of the selected major, students may not count more than two courses toward both parts of their total requirements (Sociology requirements and Administrative Studies requirements).

Sociology/Ethnic Studies Major

The major in Sociology/Ethnic Studies has been discontinued. Students currently working toward the B.A. degree in Sociology/Ethnic Studies (as well as readmitted students and transfer students accepted prior to Fall 2000) will be allowed to complete the degree requirements but must graduate by June 2002. For a listing of degree requirements consult the 1997-98 UCR General Catalog.

Sociology/Law and Society Major

The major requirements for the B.A. and the B.S. degrees in Sociology/Law and Society are as follows:

For the Bachelor of Arts

1. Sociology Department requirements (40 units)
   a) SOC 001, SOC 110A, SOC 110B
   b) Twenty-eight (28) additional units in upper-division Sociology courses of which no more than 8 units may be in any combination of SOC 190, SOC 197, SOC 198G, SOC 198-L (Students may take more than the minimum required courses in upper-division Sociology)

2. Requirements for Law and Society (36 units)
   a) PHIL 007 or PHIL 007H
   b) LWSO 100
   c) One course chosen from the following list: ECON 111, PSYC 012, SOC 110A,
Minor

The Sociology Department offers a minor in Sociology.

The requirements for the minor are as follows:

1. SOC 001

2. Twenty-four (24) upper-division units from:
   a) SOC 110A, SOC 110B, and either SOC 168 or SOC 169
   b) Any three additional upper-division courses in Sociology with no more than 4 units in any combination of SOC 190, SOC 197, SOC 198G, SOC 198-I

There can be no substitution for the courses listed without prior departmental approval.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Sociology Undergraduate Honors Program

Students who meet the departmental requirements for academic excellence are invited at the end of their junior year to participate in the Sociology Undergraduate Honors Program during their senior year. The students enrolled in SOC 195 to work on an honors thesis under the supervision of a faculty member, for a total of 12 units distributed over three quarters. Students in the program also participate in SOC 199H, a year-long seminar led by the Chair of Undergraduate Affairs Committee, for which they receive a total of 3 additional units of credit.

Education Abroad Program

The Sociology Department encourages eligible students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units toward graduation. Because strategy in choosing courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult the departmental Student Affairs Officer or Undergraduate Advisor for assistance. For further details see Education Abroad Program under International Services Center in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

GRADUATE PROGRAM

The graduate program is designed to prepare scholars for teaching and research in the discipline of sociology. As such, it is organized primarily for students seeking the Ph.D. degree, although the M.A. degree may be awarded in the course of a student’s progress.

Admission to graduate status in the Department of Sociology is based upon four criteria:

1. The applicant’s prior academic performance, especially in Sociology;
2. The student’s performance on the Graduate Record Examination;
3. Letters of reference from persons familiar with the applicant’s potential for achieving academic excellence; and
4. The extent to which the student’s areas of expressed interest coincide with departmental emphases.

In addition, students are encouraged to submit a copy of one professional or term paper with their application; written work, if submitted, will be considered in admission decisions. Normally, students are admitted for the fall quarter of each academic year. Although students may petition to be admitted to the program during the academic year, mid-year admissions are not recommended because the sequence of core courses is designed to begin with the fall quarter. The deadline for applications for admission for the fall quarter is March 1, and for various University fellowship programs, January 5. Students who apply by March 1 will be notified in April whether or not they have been admitted to the graduate program in Sociology. Students who lack adequate undergraduate preparation in sociology will be required to make up such deficiencies before work can be credited toward the graduate program. A detailed statement of degree requirements and procedures for the graduate degrees is available at the departmental office. General University requirements of the Graduate Division can be found in the Graduate Studies section of this catalog.

The graduate program is constructed so that all students normally proceed through three distinct stages in their movement toward the Ph.D. degree: the basic core program, the period of specialization, and writing the dissertation.

Basic Core Program

All students complete the basic program, regardless of whether they hold the B.A. or M.A. degree at the time of admission. A student is expected to complete the basic program in not less than three nor more than six academic quarters. The Chair of the Graduate Affairs Committee counsels the student concerning matters relevant to the core program.
Course Requirements

1. In the core program, the minimum requirement is 40 units of academic work with no grade less than a "B" in core courses. Work in the basic core courses must be distributed as follows:

   a) Required Core Sequence in Theory: SOC 202A, SOC 202B.
   b) Required Proseminar in Sociology: SOC 232.
   c) Required Core Sequence in Methodology: SOC 201A, SOC 201B.
   d) Required Research Practicum: SOC 250.
   e) Required Core Sequence in Statistics: SOC 203A, SOC 203B
   f) Required Research Colloquium: SOC 293. (Required each quarter until student is advanced to candidacy.)
   g) A minimum of two of the following core courses in Substantive Areas: SOC 240, SOC 244, SOC 245, SOC 246, SOC 247, SOC 248, SOC 249.

2. At the conclusion of each two-course sequence, separate written comprehensive examinations in theory, methodology, and statistics must be taken and passed by all students.

Students who have had extensive graduate training in a core course area at another graduate school, may petition the Graduate Affairs Committee to be examined by a special faculty committee for possible exemption from that core requirement.

Each student submits one paper for faculty review which is in a form, content, and style which would be appropriate for publication or presentation to a sociological audience if it were submitted for review. Each paper is evaluated by a faculty committee and is part of the assessment for admission to the period of specialization.

When students have successfully completed their requirements under the core program, and have had their papers approved by the faculty committee, they request admission to the period of specialization by filing a Petition for Faculty Evaluation with the Department. Following faculty evaluation of all aspects of the students' performance, the Sociology faculty will decide if the students have successfully completed the preliminary qualifying portions of their program and are to (1) be awarded an M.A. degree and admitted to the period of specialization; (2) be awarded an M.A. degree but not be admitted to the period of specialization; (3) not be awarded an M.A. degree and not be admitted to the period of specialization.

Period of Specialization

After admission to the period of specialization, the students, their advisors and the chair of the Graduate Affairs Committee work out a program of graduate seminars, directed reading courses, and research experiences appropriate to the students' two areas of specialization. The following are the primary areas of specialization offered by the Department:

1. Criminology and Sociolegal Studies
2. Urban/Environmental Sociology
3. Gender Studies
4. Institutional Analysis
5. Large-Scale Organizations
6. Race and Class Inequality
7. Research Methods
8. Social Psychology
9. Sociological Theory

A student's program must include at least one academic quarter of supervised research experience through enrollment in SOC 297 and/or through working as a research assistant. The equivalent of at least one academic quarter of experience in classroom teaching at the college level is also required. These activities are an integral part of the training program and fundamental experiences in the educational process leading to the Ph.D. Each student takes the initiative in arranging for this experience with the assistance of the chair of the Graduate Affairs Committee.

The qualifying examinations are both written and oral.

1. Written examinations are taken in two areas of specialization. These examinations are administered by standing committees.
2. Upon successful completion of the written examinations, the oral examination will be conducted by a committee of at least five faculty members, one of whom is from another department and three of whom will be on the student's Dissertation Committee. Students who pass the oral examination are advanced to candidacy for the Ph.D. degree.

Examination Sequence

1. Both written and oral examinations must be completed before the end of the fourth year of graduate study.
2. Both written examinations must be completed at least three weeks prior to the oral examination, and both written and oral examinations must be taken during the regular course schedule. Note: This does not include the final examination period, nor the period between quarters.
3. The oral examination committee will meet to prepare the oral examination format and to subsequently inform the candidate of any deficiencies or prerequisites appropriate to the oral examination.
4. The oral examination will cover the written examinations and other material in the student's areas of specialization, but will not cover the dissertation plans unless the student so desires.

Dissertation

A Dissertation Committee, consisting of a minimum of three members of the faculty, is organized by the departmental faculty in consultation with the student. This committee must be formed no more than one quarter following advancement to candidacy. A written prospectus must be submitted by students to the Chair of their Dissertation Committee who will call a meeting of the committee to discuss the prospectus with the students. An approved prospectus is required no more than one year following advancement to candidacy. The dissertation must be completed in no more than two years after advancement to candidacy.

Extensions are granted only by special petition to the graduate advisor and action by the departmental faculty. Before the final draft of the dissertation is approved, students must show evidence of having successfully completed a minimum of four core courses in Substantive Areas. Core courses not used to satisfy the M.A. or specialization requirements may be taken Satisfactory (S) or No Credit (NC).

After the dissertation is prepared, according to the rules and format of the Graduate Division, and signed and approved by the committee, an oral defense of the dissertation is held. The defense of the dissertation may be waived in exceptional circumstances.

The normative time to the Ph.D. degree is 18 quarters.

LOWER-DIVISION COURSES

SOC 001. Introduction to Sociology. (4)
Lecture, three hours; discussion, one hour. Basic concepts and theories relating to the study of man as a participant in group life; analysis of culture, social institutions, personality development, and processes of social interaction.

SOC 003. Inequality in American Society. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. This course examines the presence of inequality in modern American society. The role gender, race and ethnicity, and social class play in the maintenance of inequality is examined.

SOC 010. The City: An Introduction. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): none. An introductory exploration of urban processes. Subjects examined include definition, form, struc-
SOC 015. Social Problems. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): SOC 001, SOC 168, SOC 169. A review of the basic forces of human interaction and organization with an eye to extracting the abstract theoretical principles that explain the operation of these forces. Involves reading and learning highly abstract materials in order to discover some of sociology’s basic laws or principles.

SOC 020. American Society. (4)
Lecture, three hours; discussion, one hour. An examination of the culture and structure of American society. Cultural values and beliefs, as well as key institutions, community patterns, and systems of inequality will be prominent topics.

SOC 025. Primate Societies. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): none. A survey of primate societies from a sociological perspective. Topics include primate origins, distribution, social and sexual relationships, and support networks. In particular, focuses on the social networks of monkeys and apes and compares the similarities and differences that exist among human and nonhuman primate societies.

SOC 101. Theoretical Principles of Sociology. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): SOC 001, SOC 002. An introduction to the fundamental concepts and theories of sociology. Includes consideration of the relationship between the American Indian community and the surrounding society. Although concerned with the history and culture of Native Americans, the main emphasis is on the contemporary situation.

SOC 102. Statistical Analysis. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 110A, or consent of instructor. Logical and procedural aspects of the application of statistical methods for data reduction and hypothesis-testing in sociology; distributions, tabulations, central tendency, variability, independence, contrasts, correlation and regression, nonparametrics. Required of all majors.

SOC 110. Multivariate Analysis. (4)
Lecture, three hours; laboratory, one hour. Prerequisite(s): SOC 110B, or consent of instructor. Computer analysis of social and behavioral data using statistical inference, multiple-regression, simulation, and multivariate nonparametric techniques. Required of all B.S. candidates.

SOC 120. Human Social Institutions. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): SOC 001 or consent of instructor. A comparative analysis of the historical and evolutionary development of basic human institutions, including economy, kinship, religion, polity, law, education, medicine, and science. Emphasis is on the historical emergence and differentiation of institutions, and on the dynamic interconnections among institutions in contemporary societies.

SOC 121. Sociology of the 1960s. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): SOC 001 or consent of instructor. A sociological approach to the economic, political, and cultural events of the 1960s. Analysis of the impact of such phenomena as civil rights, popular culture, theology, and political events. Discussion of the present-day legacy including personal histories of former activists.

SOC 122. Social Change. (4)
Lecture, three hours; outside reading and research, one hour. A study of patterns of social change, resistance to change, and change-producing processes and agencies.

SOC 123. Human Societies. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): ANTH 001 or ANTH 011H or SOC 001. An analysis of the emergence and development of human societies from hunters and gatherers to horticultural, agrarian, and industrial forms of social organization. Topics include social networks, societal change, the transition from food collecting to food producing early Germanic societies, the rise of the West, and the causes of the industrial revolution.

SOC 124. Juvenile Delinquency. (4)
Lecture, three hours; discussion, one hour; consultation, one hour. An analysis of the nature of delinquency and juvenile justice in American society. Emphasis on divergent models for administering justice including pre-court stages, intake procedures, custody treatment, detention and release, adjudication, disposition, and post-adjudication supervision, including institutionalization.

SOC 125. Evolutionary Sociology. (4)
Lecture, three hours; written work, three hours. Prerequisite(s): SOC 001 or consent of instructor. Examines the objectives and scope of a cross section of approaches which use evolutionary reasoning to examine such topics as social evolution, human evolution, our primate heritage, neurobiology, and human nature.

SOC 127. Native Americans. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): SOC 001 or consent of instructor. Focuses on the relationship between the American Indian community and the surrounding society. Although concerned with the history and culture of Native Americans, the main emphasis is on the contemporary situation.

SOC 128. Chicano Sociology. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the study of Mexican Americans in the United States. Focuses on the social, economic, political, and cultural aspects of Mexican American life.

SOC 129. Racism in Western Society. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 001 or consent of instructor. An analysis of the origins, character, maintenance, and consequences of racism in Western society with an emphasis on the United States.

SOC 130. Race and Ethnic Relations. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 001 or consent of instructor. A study of racial and ethnic underrepresented groups past and present. A search for general principles about their social relations.

SOC 131. (E-Z). Selected Ethnic Groups. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): SOC 001 or consent of instructor. In-depth studies of particular ethnic groups in the United States. A specific ethnic group is treated for an entire quarter: F. Black Americans; H. Jewish Americans.

SOC 132. Inequality and Social Class. (4)
Lecture, three hours. Prerequisite(s): SOC 001 or consent of instructor. Analysis of theory and research concerning sources of inequality in the distribution of scarce rewards in society; the influence of aspects of social class; processes involving hierarchical allocation of social groups to positions.

SOC 133. Law, Race, Class, Gender, and Culture. (4)
Lecture, three hours; term paper, three hours. Departmental study of the role of law in the social structure. Includes consideration of the relationship between law and social change.

SOC 134. Law, Race, Class, Gender, and Culture. (4)
Lecture, three hours; term paper, three hours. Departmental study of the role of law in the social structure. Includes consideration of the relationship between law and social change.
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Sociology 051. Social Networks. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 001 or consent of instructor. Examines the behavioral consequences of social network linkages among individuals in social networks. Topics include neighborhood and community networks, corporate and elite networks, and personal “ego” networks. Emphasis placed on the dynamics of social structures, how they operate to restrict individual behavior, and how they convey resources for social support and career success.

Sociology 058. Sociology of Religion. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. A comparative and analytic treatment of religion as a social institution. Focuses on the relationships of religion and other social institutions with particular emphasis on the American experience. Topics include religion as an agent of change as well as stability in society.

Sociology 059. Sociology of Law. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to social scientific perspectives and research on the nature, sources, dimensions, and impact of law. Particular attention is given to the “values question” in defining and studying law as a set of social phenomena; conceptual issues and methodological strategies in establishing and interpreting linkages between legal and other social structures and processes; and analyzing the uses and limits of law in maintaining order and promoting social change.

Sociology 100. Sociology of Education. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Comparative analysis of educational institutions in complex societies and their relationship to the society’s political and economic structure with an examination of the school as a societal subsystem consisting of teacher, student, and administrator roles and its own evolving subculture. Cross-listed with HMDV 160.

Sociology 140. The Sociology of Women. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 001 or consent of instructor. Analysis of the role women have played in society with an emphasis on modern American society. It will consider some of the social determinants of women’s positions and the efforts being made to bring about change.

Sociology 141. Men and Masculinity. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 001 or consent of instructor. A comparative and historical exploration of the social and personal meanings of masculinity with special emphasis on the American experience. Topics include socialization, sports and war, friendship, intimacy, sexuality, fathering, and work. Particular attention is paid to the role of masculinity in systems of gender inequality.

Sociology 142. Sociology of the Family. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 001 or consent of instructor. A comparative and historical treatment of the family. Major theoretical frameworks developed for conceptualizing the family as a social system are explored within the context of the relationship between social structure and family group processes.

Sociology 143. Urban Sociology (4)
Lecture, three hours; outside reading and research, one hour. Prerequisite(s): SOC 001 or consent of instructor. A comparative examination of metropolitan and other urban communities, with emphasis on processes of urbanization. Cross-listed with URST 143.

Sociology 144. Family Violence. (4)
Lecture, three hours; discussion, one hour. Addresses causes, identification, and prevention of all types of intra-family abuse: child, sibling, spouse, and parent. Examines theories and research findings for practical field application. For upper-division students whose careers will bring contact with victims and/or perpetrators of family violence.

Sociology 145. Law and Subordination. (5)
Lecture, three hours; field, six hours. Prerequisite(s): upper-division standing in Ethnic Studies or Sociology. ETST 126/SOC 126. A comparative and historical analysis of subordinated communities and law with special emphasis on integrating theoretical understanding of racial, class, and gender subordination. Field experience working directly with groups that have traditionally lacked equal access to the legal and judicial system. Cross-listed with ETST 145. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

Sociology 146. Criminology. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 001 or consent of instructor. Analysis of nature and patterning of criminality, with attention to theoretical and methodological issues encountered in research. Explanations and crime control policies are critically examined regarding linkages among (1) social conflicts and inequalities; (2) criminal laws and enforcement practices; and (3) social deviance.
eral organizational models that challenge prevailing notions about the superiority of bureaucratic organization. Topics covered include self-employment in conventional small businesses; partnerships, cooperatives, and worker-owned firms; franchising, employee stock ownership, and workers' self-management. Recommended for business administration majors.

Lecture, three hours; discussion, consultation or field work, one or more hours. Prerequisite(s): SOC 001 or consent of instructor. Study of the sociological contribution to theory and research in social psychology bearing on the relationship between culture and group life to human behavior and personality.

**SOC 174. Socialization and Personality. (4)**
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 001 consent of instructor. An analysis of socialization from various theoretical perspectives with emphasis on the impact of patterns of child rearing on personality development. Treatment will be historical and cross-cultural, with particular attention to the relationship among family structure, social structure, and socialization processes. Cross-listed with HMBD 174.

**SOC 175. Social Roles and Interaction. (4)**
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. The nature of face-to-face contact between persons in everyday life. The relation between the social self, social roles, and communication in the day-to-day activities of persons in informal groups, in closed establishments, and in public contacts.

**SOC 176. The Sociology of Work in Organizations. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): SOC 001 or consent of instructor. Emphasizes the roles of individuals in organizations. Topics covered include the design and redesign of jobs, the effects of job characteristics on the worker, trends in job content, and the aggregation of individual jobs into occupations and labor market segments. Cross-listed with BSAD 176.

**SOC 177 (E-Z). Topics in Social Psychology: Sociological Orientation. (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): SOC 173 or PSSY 140, or consent of instructor. Intensive study of selected topics in social psychology, such as the individual and social change; attribution theory; experimentation in social psychology; exchange and consistency theories in social psychology; applied social psychology: E. Sex Roles; F. Sociology of Human Sexuality.

**SOC 180. Deviance and Control. (4)**
Lecture, three hours; discussion, one hour. Prerequisite(s): SOC 001 or consent of instructor. An introduction to the sociological analysis of deviance as defined by informal and formal processes of social control in varying cultural, legal, and political contexts. Emphasis is upon the social construction and imposition of standards (norms) by which some personal and collective attributes and actions come to be negatively evaluated and penalized, while others are positively evaluated and rewarded.

**SOC 182. Urban Problems. (4)**
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. An interdisciplinary examination of selected urban problems such as civil disorders, transportation, housing, welfare, and planning. Cross-listed with HMBD 182 and URST 182.

**SOC 183 (E-Z). Special Topics in Sociology. (4)**
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. These courses examine special topics in sociology which are not a regular part of the curricular offerings in the Department. Content of each course is announced as offered. G. Collective Behavior; H. Aging in America; V. Power and Society; W. Social Mobility.

**SOC 184. Environmental Sociology. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): SOC 001 or consent of instructor. A sociological approach to the study of mainstream environmentalism, societal implications of environmental reform, the nature of distributive impacts (costs and benefits), environmental conflict resolution, land-use decision making, and noxious facility siting on minority, working class, and poor communities.

**SOC 190. Special Studies. (1-5)**
Individual study, three to fifteen hours. Prerequisite(s): upper-division standing; consent of instructor and Department Chair. Individual study, directed by a faculty member, to meet special curricular needs. Course is repeatable to a maximum of 15 units.

**SOC 195. Senior Thesis. (2-4)**
Total credit may not exceed 12 units. Required for all participants in the department's senior honors program, who must enroll for 4 units per quarter for a total of three quarters. Students wishing to undertake senior thesis projects outside the senior honors program, may enroll in SOC 195 for 2-4 units per quarter for one, two, or three quarters.

**SOC 197. Research for Undergraduates. (1-4)**
Variable hours. Prerequisite(s): upper-division standing with consent of instructor. Directed original research. Course will be graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**SOC 198G. Group Internship in Sociology. (1-12)**
Variable hours. Prerequisite(s): SOC 110A and consent of instructor. Group internship in community agencies to observe community processes. The student spends three hours per week in a combination of academic preparation and internship for each unit of credit. May be repeated up to a total of 16 units.

**SOC 198-I. Individual Internship in Sociology. (1-12)**
Variable hours. Prerequisite(s): SOC 110A and consent of instructor prior to enrollment in the course to facilitate placement. Individual internship in community agencies to observe community processes. The student spends three hours per week in a combination of academic preparation and internship for each unit of credit. May be repeated up to a total of 16 units.

**SOC 199H. Senior Honors Research. (1)**
Required seminar for all participants in the department's senior honors program. Must be taken in conjunction with SOC 195, and for a total of three quarters.

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**GRADUATE COURSES**

**SOC 201A. Research Perspectives: Qualitative Methods. (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): SOC 110A or equivalent, graduate standing; or consent of instructor. An overview of the uses of qualitative methods in sociology. Topics include epistemological questions, participant and systematic observation, intensive interviewing, participatory methods; and the uses of documentary and historical resources.

**SOC 202A. History of Sociological Theory. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Examinations of the development of sociological thought from 1830 to 1930, stressing the major ideas, concepts, and principles developed by early social theorists.

**SOC 202B. Contemporary Sociological Theory. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): SOC 202A or consent of instructor. Examinations of sociological theory from 1930 to the present, stressing the major ideas, analyses, and principles developed by contemporary theorists.

**SOC 203A. Descriptive and Multivariate Statistics. (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): SOC 110A and SOC 110B or equivalents, SOC 201A or SOC 201B, graduate standing; or consent of instructor. Covers principles of partial and joint association, variance, and statistical estimation through the use of logical linear, multiple regression, and ANOVA models.

**SOC 203B. Multi-Equation and Measurement Models (4)**
Lecture, three hours; individual study, three hours. Prerequisite(s): SOC 110A and SOC 110B or equivalents, SOC 201A and SOC 201B or SOC 203A, graduate standing; or consent of instructor. Covers principles of multi-equation systems, latent variables, and factors through the use of confirmatory factor and covariance structure models. Covers reliability and validity assessment for scaling techniques.

**SOC 232. Proseminar in Sociology. (2)**
Lecture, two hours. Prerequisite(s): admission to the graduate program. Graduate orientation to sociology as a scholarly discipline and empirical science. Required of all first-year graduate students. Graded Satisfactory (S) or No Credit (NC).

**SOC 240. Sociology of Gender. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Course will cover a broad variety of issues in the sociology of gender including socialization to gender roles, sexuality and sexual relations, housework, changing patterns of labor force participation, women in politics, and other gender issues. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

**SOC 242 (E-Z). Sociological Theory. (4)**
Lecture, three hours; outside research, three hours. Prerequisite(s): SOC 202A or SOC 202B, graduate standing; or consent of instructor. Advanced study in sociological theory. E. History of Theory; F. Issues in Contemporary Theory; G. Issues in Theory Construction; M. Macrostructural Analysis. May be graded Satisfactory (S) or No Credit (NC) with permission of Graduate Advisor.
SOC 243 (E-Z). Special Topics in Sociology. (4)
Lecture, three hours. Prerequisite(s): graduate status and consent of instructor. Critical analysis of current theory and research in special areas of sociology. Covers a single topic not contained in a regular course. Announcement of each topic will be made at the time the course is offered. May be graded Satisfactory (S) or No Credit (NC) with permission of Graduate Advisor.

SOC 244. Institutional Analysis. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. The comparative and historical analysis of human social institutions, with emphasis on: (a) the emergence and development of the basic institutional systems of economy, polity, kinship, religion, law, and education; (b) the structure and process of these institutions in varying types of societies; (c) the interrelation of these institutions to each other and to other structuring processes. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 245. Large-Scale Organizations. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. A review of the sociological literature on large-scale organizations. Provides an introduction to rational, political, economic, organizational and institutional models of large-scale organizations. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 246. Race and Class Inequality. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Introduction to the various theories of racial and class inequality. Areas covered will include social scientific explanations for racial and ethnic inequality: ideological justifications for racial, ethnic, and class inequality; intersection of caste, class, and race in world inequality; and strategies to end inequality. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 247. Core Course in Urban Sociology. (4)
Lecture, three hours. Prerequisite(s): graduate status and consent of instructor. A review of the literature on urban sociology.

SOC 248. Core Course in Social Psychology. (4)
Lecture, three hours. Prerequisite(s): HDMV 174/SOC 174, SOC 173; consent of instructor. A review of the sociological literature on social psychology.

SOC 249. Contemporary Research and Theory in Criminology and Sociological Studies. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Review of basic issues and major contributions in studies of crime, deviance, and law. May be taken Satisfactory (S) or No Credit (NC) with permission of instructor and advisor.

SOC 250. Research Practicum. (4)
Seminar, three hours. Prerequisite(s): completion of methods sequence. A seminar of supervised research in which students are expected to integrate theory with data, within the context of work on a topic of individual choice. Graded Satisfactory (S) or No Credit (NC).

SOC 255 (E-Z). Topics in Large-Scale Organizations. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing and SOC 245 or consent of instructor. Advanced study of large-scale organizations: I. Organizational Theory; II. Methods of Organizational Research; M. The Sociology of Work; N. Economic Organizations; O. Social Organization of Sciences. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor or advisor.

SOC 257 (E-Z). Topics in Sociological Analysis. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing and SOC 244 or consent of instructor. Advanced seminars in institutional analysis: E. Economic Sociology; F. The Sociology of Family and Kinship; G. The Sociology of Education; H. Political Sociology. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 260. Environment and Society. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate status and consent of instructor. This course will analyze the sociological implications of environmental problems. It will explore the alternative theories used to study human-environment interactions, the environmental movement and social change, costs and benefits of environmental regulations, political economy of environment-development disputes and land use conflicts; and distributive impact of environmental reform.

SOC 262. Theory and Method in Gender Studies. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Provides students with an overview of recent debates about theory and method in gender studies. Relationships between feminist theory, feminist practice, and social science are explored. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 263. Women and Work in World Historical Perspective. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing and SOC 240 or consent of instructor. Examines the role of women as workers in a variety of societies. Considers the role of women in developments and the impact of development on women's economic roles. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 264 (E-Z). Topics in Gender Studies. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing and SOC 240 or consent of instructor. This course examines in depth the implications of gender: Domestic and Sexual Violence; G. The Sociology of Men. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 265 (E-Z). Topics in Race and Class Inequality. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing and SOC 246 or consent of instructor. Advanced study in the sociology of gender: E. Domestic and Sexual Violence; G. The Sociology of Men. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 266. Race and Ethnic Relations. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing and SOC 246 or consent of instructor. A review of sociological literature on race and ethnic minorities, patterns of conflict and ethnic antagonism, and systems of dominance. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 267. Social Stratification. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing and SOC 246 or consent of instructor. A review of sociological literature on racial and class stratification, power, and equality. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 268. Law, Race, Class, and Gender. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): graduate standing or consent of instructor. Presents an analysis of how issues of race, class, and gender shape legal thought and jurisprudence. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 270. Intermediate Qualitative Analysis. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): SOC 210A and SOC 210B, graduate standing or consent of instructor. Provides an overview of the uses and limitations of methods of collection and analysis of qualitative data in sociology. Included are participant and systematic observation, intensive and informant interviewing, and the uses of documentary and historical sources. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 271. Intermediate Quantitative Analysis. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): SOC 210A, SOC 210B, SOC 210A, SOC 210B, graduate standing or consent of instructor. Provides an overview of the uses and limitations of methods for the analysis of quantitative data in sociology. Included are logit and log-linear (and related) models, general linear model applications, and related techniques. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 272 (E-Z). Advanced Topics in Research Methods. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): SOC 210A, SOC 210B, SOC 210A, SOC 210B, graduate standing or consent of instructor. Analysis of specific problems and methods of sociological research at an advanced level: E. Historical and Comparative Methods; F. Field Methods and Studies; G. Survey Research Methodology; I. Experimental and Quasi-Experimental Design and Analysis; J. Measurement and Scaling Techniques; K. Introduction to Mathematical Sociology; M. Analysis of Nominal and Ordinal Data; N. Analysis of Continuous Data. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

SOC 275 (E-Z). Topics in Urban Sociology. (4)
Seminar, three hours. Prerequisite(s): SOC 247. Advanced study in urban sociology: E. Urban Ecology; F. Suburbanization; G. Urban Problems; H. Urban Political Sociology. May be graded Satisfactory (S) or No Credit (NC) with permission of Graduate Advisor.

SOC 278. Punishment and Correction: Evaluating Theories and Policies. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): either graduate standing and SOC 249 or consent of instructor. This course takes a critical and evaluative approach to the punishment and correctional systems, assessing what “works and doesn’t work” in efforts to reduce crime and delinquency. Prisons, probation, and other crime control measures are examined from a perspective emphasizing the need for systematic evaluation research. May be taken Satisfactory (S) or No Credit (NC) with permission of instructor and advisor.

SOC 279. Analysis of the Criminal Justice Process. (4)
Seminar, three hours; outside research, three hours. Prerequisite(s): either graduate standing and SOC 249 or consent of instructor. This course examines in depth the penal social control agencies of the police, the courts, and the correctional system both from ideological and
operational points of view. The effects on the individual and society of these mechanisms as well as alternative approaches to formal control mechanisms are examined. May be taken Satisfactory (S) or No Credit (NC) with permission of instructor and advisor.

**SOC 280 (E-Z). Topics in Criminology and Sociological Studies. (4)**

Seminar; three hours; outside research, three hours. Prerequisite(s): either graduate standing and SOC 249 or consent of instructor. Advanced seminars in criminology and sociological studies: E. Patterns of Criminal and Deviant Behavior; F. Ecological Perspectives on Crime and Delinquency; G. Biological and Psychological Studies of Crime and Delinquency; H. Conflict and Radical Approaches in Criminology and Sociological Studies; J. Sociological Theories of Law; K. Law, Power, and Social Conflict; M. Political Criminality. May be taken Satisfactory (S) or No Credit (NC) with permission of instructor and advisor.

**SOC 285 (E-Z). Topics in Social Psychology. (4)**

Seminar; three hours; outside research, three hours. Prerequisite(s): SOC 248 or consent of instructor. Advanced study in social psychology: E. Theory in Social Psychology; F. Methods of Research in Social Psychology; G. The Interaction Process; H. Social Psychology of Social Movements; I. Sociology and Social Psychology; J. Social Psychology of the Family; K. The Social Psychology of Gender. May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and advisor.

**SOC 290. Directed Studies. (1-6)**

Seminars, three to fifteen hours; consultation, one hour. Prerequisite(s): graduate standing and consent of instructor. This course is designed to provide students with reading and research work under the tutuorial supervision of a faculty member in support of developing their knowledge of specialty areas and/or preparing original research work. With consent of the graduate advisor, this course may be taken for a letter grade to satisfy required seminars in the period of specialization if regular seminars are not available. Otherwise course will be graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**SOC 293. Research Topics in Sociology. (2)**

Lecture, two hours. Prerequisite(s): graduate standing and consent of instructor. This course is designed to provide students with reading and research work under the tutuorial supervision of a faculty member in support of developing their knowledge of specialty areas and/or preparing original research work. With consent of the graduate advisor, this course may be taken for a letter grade to satisfy required seminars in the period of specialization if regular seminars are not available. Otherwise course will be graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

**SOC 297. Directed Research. (1-6)**

Graded Satisfactory (S) or No Credit (NC).

**SOC 299. Research for Thesis or Dissertation. (1-12)**

Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**SOIL AND WATER SCIENCES**

Subject abbreviation: SWSC

Marylynn Yates, Ph.D., Chair

Program Office, 2207 Geology
(909) 787-5103

http://envisci.ucr.edu/default.htm

**Professors**

Andrew C-S. Chang, Ph.D.
Agricultural Engineering

Walter J. Farmer, Ph.D. Soil Chemistry
William T. Frankenberg, Jr., Ph.D.
Soil Microbiology

Robert C. Graham, Ph.D. Soil Mineralogy
William A. Jury, Ph.D. Soil Physics

John Letey Jr., Ph.D. Soil Physics
Lanny J. Lund, Ph.D. Soil Morphology, Genesis, and Classification

Daniel Schlenk, Ph.D. Aquatic Ecotoxicology
Marylynn V. Yates, Ph.D. Environmental Microbiology

**Professors Emeriti**

Glen H. Cannell, Ph.D. Soil Physics
Homer D. Chapman, Ph.D., LL.D.
Soils and Plant Nutrition

James D. Oster, Ph.D. Soil Chemistry
Albert L. Page, Ph.D. Soil Chemistry

Parker F. Pratt, Ph.D. Soil Chemistry

**Associate Professors**

Christopher Amrhein, Ph.D. Soil Chemistry
Michael A. Anderson, Ph.D. Soil Chemistry

David M. Crohn, Ph.D. Biosystems Engineering
David E. Crowley, Ph.D. Soil Physics

Paul J. Ziemann, Ph.D. Atmospheric Chemistry

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**Adjunct Professors**

James D. Rhoades, Ph.D. Soil Science

William F. Spencer, Ph.D. Soil Chemistry

Donald L. Suarez, Ph.D. Geochimistry

Martins T. van Gemuchten, Ph.D. Soil Physics

Scott R. Yates, Ph.D. Soil Physics

**Adjunct Associate Professors**

Francis N. Dalton, Ph.D. Soil Physics

Sabine Goldberg, Ph.D. Soil Chemistry

**Cooperating Faculty**

Mark R. Matsumoto, Ph.D.
Chemical/Environmental Engineering

Harry W.K. Tom, Ph.D. Physics

**GRADUATE PROGRAM**

The graduate program in Soil and Water Sciences is administered by the Department of Environmental Sciences, and offers both M.S. and Ph.D. degrees. The University requires General Test scores (verbal, quantitative, analytical) from the Graduate Record Examination. As well as fulfilling the University requirements for admission to the Graduate Division, students must satisfy certain program requirements. Admission to the program requires a baccalaureate degree with preparation in both physical and life sciences. Students entering the program are expected to have completed one year of general chemistry, as well as courses in general physics, organic chemistry, calculus through integrals, general biology, statistics, and physical geology or physical geography. A student who has not taken these courses will be directed by the Admissions and Review Committee and his or her major advisor to the appropriate curriculum to correct the deficiencies.

The student, in consultation with his/her Advisory Committee and other faculty as appropriate, will develop a program of course work to satisfy the degree requirements and the student’s career objective. A study list of required and elective courses must be completed by the end of the second quarter of study and submitted to the Admissions and Review Committee for review.

All students must complete one course in each of the following four broad categories of soil and water sciences: chemistry, physics, biology, and natural structure and diversity. Students may have completed these prior to admission or they may take them early in their graduate program. Courses at UCR that meet the requirement of each category are listed below.

**Chemistry**

ENSC 104/SWSC 104: Environmental Soil Chemistry

CHEM 136/ENSC 136/ENTX 136/SWSC 136: Chemistry of Natural Waters

**Physics**

ENSC 107/SWSC 107: Soil Physics

ENSC 163: Hydrology
Biology
BPSC 134/ENSC 134/SWSC 134: Soil Conditions and Plant Growth
SWSC 111: Microbiology and Biochemistry of Soils
ENSC 141: Aquatic Microbiology

Natural Structure and Diversity
ENSC 138/GEO 138/SWSC 138: Soil Morphology and Classification
ENSC 140/SWSC 140: Limnology

In partial fulfillment of requirements for an advanced degree in soil and water sciences, all graduate students must present a departmental seminar summarizing results of his/her thesis or dissertation or internship. This requirement is formalized by enrolling in SWSC 250 for two units during the final quarter of matriculation.

For a complete description of the program’s requirements, students are referred to the Guidelines for Graduate Students available in the Environmental Sciences Student Affairs Office. Other General University requirements for advanced degrees are given in the Graduate Studies section of this catalog.

Master’s Degree
Two options are available for students seeking the M.S. degree: Plan I (Thesis), and Plan II (Comprehensive Examination).

Plan I (Thesis)
A minimum of 36 quarter units of graduate and upper-division undergraduate courses in, or significantly related to, soil and water sciences are required. At least 24 of the 36 units must be in graduate courses. A maximum of 12 of these units may be in graduate research for the thesis. No more than 4 units of SWSC 290 and 2 units of SWSC 250 may be applied toward the degree. A final oral examination must be passed.

Plan II (Comprehensive Examination)
A minimum of 36 quarter units of graduate and upper-division undergraduate courses in, or significantly related to, soil and water sciences are required. At least 18 units must be in graduate courses. No more than 2 units of SWSC 250 and 6 units of SWSC 298-1 may be counted toward the required 18 units, and no units from graduate research for thesis or dissertation (SWSC 297 or SWSC 299) will be applicable.

A comprehensive written examination that covers fundamental topics in soil and water sciences is required of all Plan II students. The written exam, which is three to four hours in length, is prepared and evaluated by a committee appointed by the Department Chair. The exam is taken during the latter part of the final quarter in the M.S. program. Students must wait at least eight weeks before retaking a failed examination. Students failing the examination twice are dismissed from the program.

Doctoral Degree
The Ph.D. program provides specialized, research-based training in a variety of soil and water sciences fields. In addition to the four core courses enumerated above, the minimum requirements for the Ph.D. degree include the following:

1. Completion of all course work with an average GPA of 3.0 or greater
2. Passing both the written and oral qualifying examinations
3. Completion of at least four units of Teaching Practicum (SWSC 302)
4. Submission of an approved research dissertation

Before advancement to candidacy, students must complete all required course work as approved by their Advisory Committee, pass a written qualifying examination administered by a five-member committee, and pass an oral examination administered by the same committee; the latter includes the defense of an original research proposal. The examining committee must include one member from outside the graduate program. After successfully completing these examinations and complying with university rules, students are advanced to candidacy.

A dissertation consisting of original research in the field of soil and water sciences is required. The dissertation must be accepted by a three-member Dissertation Committee. The student must then pass a final oral examination, which deals primarily with the dissertation and is conducted by the Dissertation Committee.

The normative time to the Ph.D. degree is 15 quarters.

UPPER-DIVISION COURSES

SWSC 100L. Introductory Soil Science Laboratory, (2) F
Lecture, one hour; laboratory, three hours. Prerequisite(s): CHEM 001A-CHEM 001B or concurrence in ENSE 100; GEO 001 is recommended. Properties of soils and their uses. Evaluation of physical, chemical, and biological properties of soils.

SWSC 104. Environmental Soil Chemistry, (5) F
Lecture, three hours; laboratory, six hours. Prerequisite(s): CHEM 001 or consent of instructor. A study of the chemistry of the solid, liquid, and gas phases in soils and soil-like materials. Topics include solid and solution equilibria, mineral solubility, clay mineralogy, ion exchange, surface chemistry, redox reactions, kinetics, and the chemistry of organic contaminants and toxic trace elements in soils. Cross-listed with ENSE 104. Amrhein

SWSC 107. Soil Physics (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): MATH 099A or MATH 099B, MATH 099C or MATH 099D, PHYS 002A or consent of instructor. Topics include physical properties of soils and methods of evaluation. Emphasis is on movement of water, heat, gases, and chemicals through soil. Cross-listed with ENSE 107. Wu

SWSC 111. Microbiology and Biochemistry of Soils. (4) W
Lecture, three hours; laboratory, three hours. Prerequisite(s): BIOL 005A, BIOL 005B, CHEM 112A-CHEM 112B (CHEM 113B may be taken concurrently). Topics include the nature of soil microflora and soil organic matter; effects of microbial processes upon chemical and physical properties of soils, mineral cycles, and plant nutrition; and biodegradation of natural and synthetic compounds added to soil. Crowly

SWSC 124. Soils of Wildland Ecosystems. (4) W
Lecture, three hours; two one-day and two one-day field trips. Prerequisite(s): ENSE 100, ENSE 100L or SWSC 100L. The properties and functions of soils in desert, grassland, charparral, forest, and alpine ecosystems, with emphasis on California; the importance of soils in natural plant communities and animal habitats; and implications of soil properties for wildlife management. Cross-listed with ENSE 134 and BESC 140. Parker

SWSC 136. Chemistry of Natural Waters. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 005 with a grade of “C-” or better or consent of instructor. An introduction to introduction to the chemical composition of natural waters. Topics include chemical equilibria, acid-base and coordination chemistry, oxidation-reduction reactions, precipitation-dissolution, air-water exchange, and use of equilibrium and kinetic models for describing marine nutrient, trace metal, and sediment chemistry. Cross-listed with CHEM 136, ENSE 136, and ENTX 136. Ziemann

SWSC 138. Soil Morphology and Classification, (4) S
Lecture, three hours; laboratory, normally three hours; two one-day field trips. Prerequisite(s): ENSE 100; GEO 001 or GEO 002; or consent of instructor. The study of soils as they occur in the field and their relations to current and past environmental conditions. Use of field and laboratory data to understand soil genesis, causes of soil variability, fundamentals of soil classification, and land use potentials. Laboratory emphasizes the description
and interpretation of soils and landscapes in the field. Cross-listed with ENSC 130 and GEO 130. Anderson

SWSC 140. Limnology. (4) S
Lecture, three hours; discussion, one hour. Prerequisite(s): CHEM 001A or CHEM 011A; CHEM 001B or CHEM 011B; CHEM 011C or CHEM 011C; ENSC 101. Study of surface waters. Considers in detail the physical and chemical processes in surface waters, aquatic biology, ecosystem dynamics, and aspects of surface water quality and modeling. Cross-listed with ENSC 140. Anderson

SWSC 176. Acquisition and Analysis of Environmental Data. (Summer) S
Lecture, two hours; discussion, one hour; laboratory, three hours; field, three hours. Prerequisite(s): ENSC 100, ENSC 101, ENSC 102, either STAT 100A and STAT 100B or STAT 120A, STAT 120B; or consent of instructor. Explores general principles of environmental sampling. Field exercises cover sampling and analysis of air, water, and soil; hydrologic and limnological measurements; and biologic characterization of soils and surface waters. Topics also include principles and use of geographic positioning systems (GPS); basic surveying and cartographic techniques for site characterization; and interpretation and presentation of field and laboratory data using computer software. Cross-listed with ENSC 176. Anderson, Parker, Byterowicz

SWSC 190. Special Studies. (1-5) F,W,S
Conference and discussion, variable time. Prerequisite(s): advanced standing. Directed group study in soil and water sciences for advanced undergraduates. Course is repeatable.

SWSC 197. Research for Undergraduates. (1-4) F,W,S
Conference and discussion, variable time. Prerequisite(s): advanced standing. Individual research on a problem relating to soil and water sciences to be conducted under the guidance of an instructor. Course is repeatable.

GRADUATE COURSES

SWSC 202. Soil Chemical Conditions and Plant Growth. (4) W
Lecture, three hours; discussion, one hour. Prerequisite(s): BIOL 143/ENSC 134/SWSC 134, ENSC 104/SWSC 104; or consent of instructor. BIOL 143/ENSC 134/SWSC 134 is recommended. Soil chemical processes that influence the bioavailability of essential mineral nutrients and potential toxic trace elements, and the plant uptake, metabolism, and partitioning of these elements. Soil solution and rhizosphere chemistry; root surface chemistry; ion transport processes in plants; mechanisms of trace element toxicities and tolerance; plant uptake and partitioning of environmentally hazardous elements. Parker

SWSC 203. Surface Chemistry of Soils. (4) W,odd Years
Lecture, four hours. Prerequisite(s): CHEM 109 or CHEM 110A, ENSC 104/SWSC 104; or consent of instructor. Quantitative description of the properties of and reactions at the soil-water interface, including charge properties, the electric double layer, ion exchange, and surface complexation reactions. Anderson

SWSC 204. Environmental Organic Chemistry. (4) W,even Years
Lecture, four hours. Prerequisite(s): CHEM 109 or CHEM 110A, CHEM 112A-CHEM 112B; or consent of instructor. ENSC 104/SWSC 104 is recommended. Considers the properties and reactions of organic contaminants in soils and surface waters, including partitioning, exchange, and transformation reactions. Anderson

SWSC 206. Principles and Theories Relating to Arid Zone Soils. (4) S,odd Years
Lecture, three hours; seminar, one hour. Prerequisite(s): ENSC 104/SWSC 104. Characteristics of soils in arid regions: soil and water resources; genesis and properties of salt-affected soils; principles and methods of reclamation; agronomic factors; salt tolerance, nutrition, and crop selection criteria.

SWSC 207. Advanced Soil Physics. (4)
Lecture, four hours. Prerequisite(s): ENSC 107/SWSC 107. Applications of physics and chemical physics to soil systems.

SWSC 211. Microbial Ecology. (3) S,odd Years
Lecture, three hours. Prerequisite(s): graduate standing or consent of instructor. Application of ecological principles to microbial communities. Emphasizes methods for analysis of diversity and community structure and statistical methods relating genetic and biochemical fingerprints to functional properties. Case studies explore applications for agriculture, disease biocinetics, and bioremediation of environmental contaminants. Cross-listed with MCB 211. Crowley

SWSC 213. Soil Mineralogy. (3) W,even Years
Lecture, three hours. Prerequisite(s): CHEM 001A or CHEM 011A, CHEM 001B or CHEM 011B; GEO 001. ENSC 104/SWSC 104 and ENSC 130/GEO 130/SWSC 130 are recommended. The composition, structure, and classification of minerals commonly found in soils. Origin, occurrence, and properties of soil minerals in relation to chemical, pedologic, and geomorphic conditions. Theory of mineral identification techniques including X-ray diffraction, thermal and infrared analysis, and electron microscopy. Graham

SWSC 218. Pedology. (4) F,even Years
Lecture, three hours; two two-day and two one-day field trips. Prerequisite(s): ENSC 130/GEO 130/SWSC 130 or consent of instructor. Integrated functioning of natural chemical, physical, and biological processes in soils in relation to the lithologic, geomorphic, biologic, and climatic environmental factors. Soil diversity and effects of pedologic processes on scales ranging from microscopic to global. Graham

SWSC 219. Transport and Fate of Inorganic Contaminants in Soil-Water Systems. (4)
Lecture, four hours. Prerequisite(s): ENSC 104/SWSC 104, ENSC 107/SWSC 107; or consent of instructor. BPS 134/ENSC 134/SWSC 134 is recommended. Integration of presentation of the basic processes involved in the transport and fate of important inorganic contaminants in soil-water systems; discussion of remediation procedures for contaminant cleanup; analysis of case studies of soil pollution.

SWSC 220. Transport and Fate of Organic Contaminants in Soil-Water Systems. (4)
Lecture, four hours. Prerequisite(s): ENSC 104/SWSC 104, ENSC 107/SWSC 107; or consent of instructor. BPS 134/ENSC 134/SWSC 134 is recommended. Integration of presentation of the basic processes involved in the transport and fate of important organic contaminants and pathogens in soil-water systems; discussion of remediation procedures for contaminant cleanup; analysis of case studies of soil pollution.

SWSC 232. Biogeochemistry. (4) F,even Years
Lecture, three hours; discussion, one hour. Prerequisite(s): graduate standing; consent of instructor. A study of the biogeochemical cycling and exchange of carbon and important nutrients (N, S, base cations) between the lithosphere, hydrosphere, and atmosphere. Quantitatively describes processes at scales ranging from local to global. Addresses modern concerns about water and atmospheric quality, including global climate change. Cross-listed with ENSC 232. Parker

SWSC 245. Chemistry and Physics of Aerosols. (3) F,odd Years
Lecture, three hours. Prerequisite(s): CHEM 109, CHEM 110B; or consent of instructor. Fundamentals of chemical and physical processes controlling behavior and properties of airborne particles. Topics include particle mechanics; electrical, optical, and thermodynamic properties; nucleation; surface and aqueous-phase chemistry; gas-particle partitioning; sampling; size and chemical analysis; atmospheric aerosols, and environmental effects. Cross-listed with CHEM 245 and ENTC 245. Ziemann

Seminar, one hour. Formal seminars on selected topics in the field of soil and water sciences by graduate students, staff, and invited scholars. Two units of credit for students who present seminars and one unit of credit for students enrolled. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

SWSC 251. Seminar in Soil Physics. (2)
Seminar, two hours. Prerequisite(s): graduate standing. Oral reports and discussion by students, faculty, and visiting scholars on current research topics in soil physics and hydrology. Graded Satisfactory (S) or No Credit (NC).

SWSC 252. Seminar in Soil Chemistry. (2)
Seminar, two hours. Prerequisite(s): graduate status. Oral reports and discussion by students, faculty, and visiting scholars on current research topics in soil chemistry.
Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**SWSC 255. Graduate Seminar in Soil Microbiology and Soil Biochemistry. (2)**
Seminar, two hours. Prerequisite(s): graduate status and SWSC 111 or consent of instructor. Oral reports and discussion by students, faculty, and visiting scholars on current research topics in soil microbiology and soil biochemistry. Emphasis will be placed on the microbiological and biochemical role of the soil in relation to maintenance of environmental quality. Graded Satisfactory (S) or No Credit (NC).

**SWSC 256. Graduate Seminar in Soil Mineralogy and Soil Genesis. (2)**
Seminar, two hours. Prerequisite(s): graduate standing. Oral reports and discussion by students, faculty, and visiting scholars on historical developments and current research topics in soil mineralogy and soil genesis. Graded on a Satisfactory (S) or No Credit (NC) basis; however, students may petition the instructor for a letter grade.

**SWSC 257. Environmental Chemistry Seminar. (1)**
Seminar, one hour. Prerequisite(s): graduate standing in Chemistry or Soil and Water Sciences. Oral presentations by visiting scholars and UCR faculty on current research topics in environmental chemistry, environmental sciences, and environmental toxicology. Graded Satisfactory (S) or No Credit (NC). Course is repeatable. Cross-listed with CHEM 257.

**SWSC 260 (E-2). Special Topics in Soil and Water Sciences. (1-3)**
Seminar, one to three hours. Prerequisite(s): graduate standing and consent of instructor. Seminars on advanced and current topics in soil and water sciences. Graded Satisfactory (S) or No Credit (NC).

**SWSC 262. Wetlands Biogeochemistry Seminar. (2)**
Seminar, two hours. Prerequisite(s): CHEM 136/ENSC 136/ENSC 136/SWSC 136 or ENSC 104/SWSC 104; ENSC 141 or SWSC 111; or consent of instructor. Oral reports and discussion by students, faculty, and visiting scholars on current research topics in biogeochemical cycling in wetland environments. Emphasis is on environmental quality issues, use of constructed wetlands as recipients of various wastewater types, and the role of wetlands in global nutrient cycles and thus climatic change. Graded Satisfactory (S) or No Credit (NC).

**SWSC 290. Directed Studies. (1-6)**
Individual study three to sixteen hours. Prerequisite(s): graduate standing and consent of instructor. Individual studies on specially selected topics in soil and water sciences under the direction of a staff member. No more than four units may be applied toward the unit requirements for the Master’s degree. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 8 units.

**SWSC 297. Directed Research. (1-6)**
Conference and research, variable time. Graded Satisfactory (S) or No Credit (NC).

**SWSC 298-1. Individual Internship. (1-12)**
Internships, three to thirty-six hours per week. Prerequisite(s): graduate standing in Soil and Water Sciences. Individual study or apprenticeship with an appropriate professional individual or organization and an academic advisor to gain professional experience and knowledge on a topic related to soil or water quality. Graded Satisfactory (S) or No Credit (NC). Course is repeatable but only 6 units may be used toward the 36 units required for the M.S. degree.

**SWSC 299. Research for Thesis or Dissertation. (1-12)**
Conference and research, variable time. Prerequisite(s): consent of a staff member. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

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**PROFESSIONAL COURSES**

**SWSC 302. Teaching Practicum. (1-4) F,W,S**
Practicum, four to twelve hours. Prerequisite(s): graduate standing. Supervised teaching in Soil and Water Sciences or Environmental Sciences courses. Required for all teaching assistants in Soil and Water Sciences. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

**SWSC 401. Professional Development in Soil and Water Sciences. (2)**
Seminar, two hours. Prerequisite(s): graduate standing in Soil and Water Sciences. Ph.D. students must also be advanced to candidacy. Oral reports and discussions by students and faculty on: reading, reviewing, and preparing professional manuscripts; preparing research proposals; developing teaching skills; preparing oral and poster presentations; choosing a research topic. Graded Satisfactory (S) or No Credit (NC).

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**STATISTICS**

Subject abbreviation: STAT

Keh-Shin Lii, Ph.D., Chair
Department of Statistics
2626 Statistics-Computer Building
Phone: (909) 787-3774
http://cns.ucr.edu/~stat/homepage.htm

***Professors***

- Barry C. Arnold, Ph.D.
- Robert J. Beaver, Ph.D.
- Sabir Ghosh, Ph.D.
- Keh-Shin Lii, Ph.D.
- J. James Press, Ph.D.
- David J. Strauss, Ph.D.

***Professors Emeriti***

- Morris J. Garber, Ph.D.
- Christopher A. Robertson, Ph.D.

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**MAJOR**

The Department of Statistics is concerned with teaching, research, and statistical consulting. The courses offered present a comprehensive spectrum of statistical and probability theory, in so far as such theory is necessary for the understanding and analysis of observational data. The applications of the theory delineated in the courses may be made in any field of experience. Laboratory classes in which examples related to the student’s actual field of interest are worked out, play an essential part. The department offers both B.A. and B.S. degrees in Statistics as well as a B.S. in Statistics with options in Statistical Computing and Quantitative Management; the M.S. degree in Statistics; and the Ph.D. degree in Applied Statistics.

The courses STAT 040, STAT 048, STAT 100A, STAT 100B, STAT 105, STAT 120A, STAT 120B, STAT 121, STAT 130, STAT 140, STAT 146, and STAT 155 are intended for students of other departments who wish a knowledge of statistical techniques. Some of them may be taken as electives by statistics majors. The objective of these courses is to acquaint the student with the elements of statistics with only the necessary amount of mathematical training.

STAT 147, STAT 150, STAT 157 are computer oriented courses intended for students who would like to learn about computer programming in the most important languages and who would like to learn about statistical computing.

In addition to teaching, the Department of Statistics is responsible to the Dean of the College of Natural and Agricultural Sciences and director of the Agricultural Experiment Station for collaboration with research workers in the biological and agricultural fields. A consultantive service in the design, analysis, and interpretation of experimental data relating to the agricultural sciences is provided.

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**Computing Laboratories**

The Department of Statistics has a strong applied orientation that involves the use of computing and the solving of real world statistical problems that arise in many disciplines. The Department has multiple computer laboratories, including a new interactive multimedia computer lab with Pentium-class machines, a SUN Microsystems Netra server, and a UNIX-based laboratory that includes multiple SUN Microsystems Ultra 10 workstations. All of these laboratories are networked with direct access to the Internet. In addition, these computers provide students, faculty, and staff with access to the campus DEC-alpha computer network. The CRAY 190 Supercomputer at the SDSC Center is also available to graduate students and faculty.

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**Statistical Consulting Center**

The Statistical Consulting Center provides consultative services, including design of experiments, statistical data reduction, inference, and modeling for the campus community and promotes cooperative research between statisticians and other investigators in all fields of the application of statistics. The Center is staffed by both faculty and graduate students.
Career Opportunities
The Department of Statistics prepares students for careers in business, government, and industry as well as for research and teaching. There is substantial demand in both the private and public sectors of our economy for those with strong training in statistics. People with bachelor's and master's degrees in statistics will typically find employment with the research departments of banks, financial and insurance institutions (actuarial activities); aerospace, electronics and other engineering organizations; pharmaceutical companies; urban planning units; marketing companies; and government agencies responsible for establishing and compiling standards for public health, safety, and quality of life. People with either the M.S. or Ph.D. in statistics may find employment in teaching as well as consulting.

Degree Requirements
University Requirements
See the Undergraduate Studies Section for requirements that all students must satisfy.

College Requirements
See Degree Requirements, College of Natural and Agricultural Sciences in the Undergraduate Studies Section, for requirements that students must satisfy.

Some of the following requirements for the major may also fulfill some of the College's breadth requirements. Consult with a department advisor for course planning.

Major Requirements
The Department offers both a B.A. and a B.S. degree in Statistics as well as a B.S. in Statistics with options in Statistical Computing and Quantitative Management.

The major requirements for the B.A. and the B.S. degrees in Statistics are as follows:

For the Bachelor of Arts
1. Core requirements (20 units)
   a) MATH 009A-MATH 009B-MATH 009C, MATH 010A
   b) Four (4) additional units in Mathematics
2. Upper-division requirements
   a) Thirty-six (36) units of upper-division course work
      (1) STAT 147, STAT 150, STAT 155, STAT 170A, STAT 170B
      (2) Sixteen (16) units chosen from STAT 127/BSAD 127, STAT 130, STAT 140, STAT 146, STAT 157, STAT 160A-STAT 160B-STAT 160C, STAT 171
3. University Requirements
   a) Thirty-six (36) units of upper-division course work
   b) Sixteen (16) units of additional course work
   c) Four (4) additional units in Mathematics

Note: An introductory Statistics class such as STAT 040, STAT 048, or STAT 100A is strongly recommended.

For the Bachelor of Science
1. Core requirements are the same as for the B.A. degree
   a) MATH 009A-MATH 009B-MATH 009C, MATH 010A
   b) Four (4) additional units in Mathematics
2. Upper-division requirements (52 units)
   a) Thirty-six (36) units of upper-division course work
      (1) STAT 147, STAT 150, STAT 155, STAT 170A, STAT 170B
      (2) Sixteen (16) units chosen from STAT 127/BSAD 127, STAT 130, STAT 140, STAT 146, STAT 157, STAT 160A-STAT 160B-STAT 160C, STAT 171
   b) Sixteen (16) units of additional course work chosen with the approval of the major advisor from Statistics courses numbered 121 and higher or from related fields.

Note: An introductory Statistics class such as STAT 040, STAT 048, or STAT 100A is strongly recommended.

Statistical Computing Option
The requirements for this option are in addition to the requirements for the B.S. in Statistics.
1. Lower-division requirements (12 units)
   a) CS 010, CS 012, CS 014
2. Upper-division requirements (20 units)
   a) STAT 157
   b) MATH 131
   c) Twelve (12) units of course work selected from
      (1) CS 141, CS 177
      (2) MATH 112, MATH 120
      (3) STAT 198-I
   d) MATH 135A-MATH 135B recommended

Quantitative Management Option
The requirements for this option are in addition to the requirements for the B.S. in Statistics.
1. Lower-division requirements (20 units)
   a) ECON 003
   b) CS 008
   c) BSAD 010, BSAD 020A, BSAD 020B
2. Upper-division requirements (16 units)
   a) MATH 131
   b) Three courses from one area
      (1) Marketing: BSAD 110, BSAD 113, BSAD 117
      (2) Finance: BSAD 134/ECON 134, BSAD 135A-135B, BSAD 136, BSAD 138
      (3) Accounting: BSAD 163, BSAD 163A-163B, BSAD 168
   (4) Management Information Systems: BSAD 170, BSAD 171, BSAD 173

Minor
The minor in Applied Statistics is designed to give students in either the social sciences or the physical sciences a cohesive set of statistics courses to deal with the data analytic aspects of their disciplines and to understand the statistical summaries that are encountered in everyday activities.

The requirements for the minor consist of at least 24 and not more than 28 upper-division units in Statistics to include the following:
1. STAT 100A-100B or STAT 120A-STAT 120B
2. Eight (8) units from STAT 127/BSAD 127, STAT 130, STAT 140, STAT 146
3. Four (4) units from STAT 147, STAT 157
4. Four (4) additional units from (2) or (3) above

No more than 8 of the 24 units may be in courses required in the student's major.
No more than 4 units may be in courses numbered 190 through 199.

See Minors under the College of Natural and Agricultural Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

GRADUATE PROGRAMS
The department offers an M.S. degree in Statistics and a Ph.D. degree in Applied Statistics.

Domestic applicants for admission to graduate programs must supply GRE verbal and quantitative test scores before they can be admitted.
Master's Program

Students entering the program must either have completed a Bachelor's degree in Statistics (or the equivalent), or take STAT 160A-STAT 160B-STAT 160C, STAT 161 and STAT 170A, STAT 170B, STAT 171, covering basic areas of probability and statistics. These courses would not be counted as credit towards the Master's degree. Students must also meet the other requirements for admission as specified by the Graduate Division. The program is Plan II (as described in the Graduate Studies section of this catalog); that is, it is taken by comprehensive examination and not by thesis. This is consistent with admission requirements of the Applied Statistics Ph.D. program. No foreign language is required.

It is expected that graduate students in Statistics take (or have already taken) appropriate courses in Mathematics to give them the proper background for graduate work in Statistics. Important areas include Calculus (at least MATH 009A-MATH 009B-MATH 009C and MATH 010A) and Linear Algebra (at least MATH 131). Students are strongly encouraged to take at least one of the following: MATH 120 (Optimization), MATH 125A-MATH 125B (Introduction to Combinatorics), MATH 135A-MATH 135B (Numerical Analysis), MATH 151A-MATH 151B-MATH 151C (Advanced Calculus), MATH 165A-MATH 165B (Complex Variables), and MATH 209A-MATH 209B-MATH 209C (Real Analysis). The specific courses selected naturally depend on the research area selected by the student.

The program shall consist of a minimum of 36 approved units. These must include STAT 281, STAT 293A-STAT 293B-STAT 293C, and 1 unit of STAT 288. In addition, at least 20 units must be from STAT 200A-STAT 200B, STAT 203A, STAT 203B, STAT 205, STAT 207A-STAT 207B, STAT 210A-STAT 210B-STAT 210C, STAT 215, STAT 216A-STAT 216B, STAT 220A-STAT 220B, STAT 230, STAT 240. Knowledge of at least one computer language and the use of statistical computer packages is required, and students lacking this background should take STAT 150 and STAT 157. They are required to select 4 or more additional quarter courses in Statistics at the 200 level, not to be graded "Satisfactory/No Credit." These additional courses should be selected in consultation with the graduate advisor and/or the student's major professor in order to strengthen a student's background in statistics and to prepare the student for thesis work and a career in research and teaching. To be approved, a program must include STAT 210A-STAT 210B-STAT 210C and three of the following five courses: STAT 200A, STAT 203A, STAT 215, STAT 216A, STAT 220A. In preparing for the written qualifying examinations, a student is permitted to register for up to six units of STAT 291 (Individual Studies in Coordinated Areas) only during quarters that the student actually participates in qualifying examinations. In addition, students in the Ph.D. program are required to complete a minimum of 12 units (or equivalent) in a substantive field with a minimum grade point average of 3.00. The requirement may be waived if the student already has the background in the substantive area. No foreign language is required for the Ph.D. in Applied Statistics.

Before advancement to candidacy, students must demonstrate proficiency on a qualifying examination which is normally taken after two years of course work and seminars. The dissertation will be pertinent to a problem area specified by the candidate's substantive field and will be submitted in accordance with the requirements of the Graduate Division.

Riverside. Teaching practice will also be required. All students in the program will, for at least 3 quarters, assist with laboratory (practice) sections of undergraduate Statistics courses or individual tutorial (consultative) work with undergraduate students.

The normative time to the Ph.D. degree is 15 quarters.

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LOWERS-CLASS COURSES

STAT 020. Statistics for the Life Sciences. (2)
Lecture, two hours. Prerequisite(s): MATH 005. Descriptive statistics, samples and populations, random sampling, probability, independence, binomial distribution, normal distributions, sampling distributions. Confidence intervals for means, hypothesis testing for population means, p-values. Categorical data, chi-square goodness-of-fit tests, contingency tables, independence.

STAT 040. Elements of Statistics. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to statistics. Adopts the modern Bayesian approach that advocates that estimates, hypothesis tests, and decisions be made from information developed from a formal combination of current and earlier data. Topics include summarizing and displaying data, designing experiments, probability, Bayes’ rule, inferences from proportions and normal populations, sampling, and regression analysis. MINITAB is used. Credit is awarded for only one of STAT 040, STAT 048, or STAT 100A.

STAT 048. Statistics for Business. (5)
Lecture, three hours; discussion, one hour; laboratory, three hours. Prerequisite(s): MATH 005, CS 008; or equivalent. An introduction to statistics using business applications. Topics include descriptive statistics, probability, discrete and continuous distributions, Bayes’ theorem, random variables, estimation and confidence intervals, hypothesis testing, analysis of variance, and simple linear regression. Credit is awarded for only one of STAT 040, STAT 048, or STAT 100A.

UPPER-CLASS COURSES

STAT 100A. Introduction to Statistics. (5)
Lecture, three hours; discussion, one hour; laboratory, three hours. Prerequisite(s): MATH 005 or equivalent. A general introduction to descriptive and inferential statistics. Topics include histograms; descriptive statistics; probability; normal, binomial, and Poisson distributions; sampling distributions; hypothesis testing; and confidence
STAT 140. Nonparametric Techniques. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): STAT 100A or consent of instructor. Introduction to nonparametric methods, topics include: rank tests, methods of association, distribution free tests, analysis of variance, nonparametric methods, and simple experimental designs.

STAT 146. Statistical Forecasting Techniques. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): STAT 100A or consent of instructor. Exponential smoothing. Regression analysis (simple and multiple). Time series. Trend analysis, seasonal analysis.

STAT 150. Basic Computer Methodology: FORTRAN Programming. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): STAT 040 or equivalent. Introduction to computer-assisted data analysis and statistical inference using the MINITAB and SAS packages. Topics include input, output, and editing of data; graphical procedures; descriptive statistics; cross-tabulation, inferential statistical techniques including estimation and testing; regression; and analysis of variance.

STAT 155. Probability and Statistics for Science and Engineering. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): MATH 009C. Sample spaces and probability distributions. Random variables and probability distributions. Selected topics in multivariate distributions. Introduction to stochastic processes. Elements of statistical inference; testing and estimation.

STAT 157. Statistical Computer Packages. (4)
Lecture, three hours; discussion, one hour.
Prerequisite(s): STAT 100A or consent of instructor. A study of major statistical packages, including SAS and BMDP with the emphasis on advanced SAS programming. Topics include advanced graphical and numerical procedures, linear models (regression and analysis of variance), multivariate techniques, and SAS macros.

STAT 160A-STAT 160B-STAT 160C. Elements of Probability and Statistical Theory. (4-4-4)
Lecture, three hours; discussion, one hour.

STAT 161. Introduction to Probability Models. (4)
Lecture, three hours; discussion, one hour.

STAT 170A. Regression Analysis. (4)
Lecture, three hours; discussion, one hour.

STAT 170B. Design of Experiments. (4)
Lecture, three hours; discussion, one hour.

STAT 171. General Statistical Models. (4)
Lecture, three hours; discussion, one hour.

STAT 190. Special Studies. (1-5)
Hours to be arranged. To be taken with the consent of the chair of the department as a means of meeting special curricular problems. Course is repeatable to a maximum of 10 units.

STAT 199H. Senior Honors Research. (1-5)
Prerequisite(s): senior standing with major concentration in statistics and with consent of instructor. Course is repeatable to a maximum of 10 units.
STAT 203B. Bayesian Statistics II. (4) Lecture; three hours; discussion, one hour. Prerequisite(s): STAT 203A. Assessing priors, nonparametric density estimation for expert group judgments, Bayesian regression, Bayesian analysis of variance, Bayesian regression with correlated disturbances and heteroscedasticity, Bayesian inference in time series models, Bayesian classification, Bayesian inference in statistical genetics, Bayesian factor analysis, and disputed authorship. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

STAT 205. Discrete Data Analysis. (4) Lecture; three hours; discussion, one hour. Prerequisite(s): STAT 160A-STAT 160B-STAT 160C or equivalent, or consent of instructor: Contingency tables, log-linear models, information theory models, maximum likelihood estimation, goodness of fit, measures of association, computational procedures.

STAT 207A-207B. Statistical Computing. (4-4) Lecture; three hours; discussion, one hour. Prerequisite(s): STAT 160A-STAT 160B-STAT 160C, STAT 170A, STAT 170B, STAT 171. Computational aspects of least squares in linear statistical models, optimization in nonlinear statistical models, consistency, eigenvector-eigenvalue computations in multivariate statistical analysis, error analysis, simulations and Monte Carlo methods for problems in statistical inference, pseudorandom numbers, variance reduction, fast Fourier transforms in time series analysis, and numerical approximations.


STAT 216A-STAT 216B. Time Series Analysis. (4-4) Lecture; three hours; discussion, one hour. Prerequisite(s): STAT 160A-STAT 160B-STAT 160C, STAT 161. Stationary processes, Auto-regressive-moving average (ARIMA) processes, trend, seasonality, model building, estimation and forecasting, spectral analysis and estimation, Kalman filtering and prediction, higher-order spectral analysis, nonlinear and non-Gaussian time series.

STAT 220A-STAT 220B. Multivariate Analysis. (4-4) Lecture; three hours. Prerequisite(s): STAT 160A-STAT 160B-STAT 160C or equivalent plus familiarity with matrix algebra. Matrix algebra, multivariate distributions (normal, Wishart, Hotelling’s T2, discriminant, etc.). Simultaneous equation systems, multivariate and categorical regression, principal components, classification, multiple dimensional scaling. Both theoretical foundations and models and applications will be discussed.


STAT 232. Statistics for Management. (4) Lecture; three hours; discussion, one hour. Prerequisite(s): MGT 403 or equivalent; familiarity with Microsoft Excel spreadsheet software. Teaches how to generate decision-making information from data and solve management problems using computer tools. Covers problem identification and formulation, model selection and use, and interpretation of the results of statistical analysis. Topics include estimation, hypothesis testing, analysis of variance, simple and multiple regression, time series and forecasting. May not be taken for degree credit by students in Statistics undergraduate or graduate programs. Cross-listed with MGT 201.


STAT 251. Statistics Colloquium. (1) Seminar; one and one-half hours. Prerequisite(s): none. Presentation of current research in statistics by faculty, advanced graduate students and guest lecturers. Graded Satisfactory (S) or No Credit (NC).

STAT 252. Spatial Statistics. (3) Seminar; three hours. Prerequisite(s): graduate standing. “Classical” analysis on point patterns, quadrat and lattice data; simple models for nonrandomness. Interactive (Markov) systems, Markov Random Fields, Gibbs Ensembles, Hammersley-Clifford theorems, Metropolis method. Data analysis techniques. Smoothing and interpolation. Spatial auto-regression. Graded Satisfactory (S) or No Credit (NC).

STAT 255 (E-Z). Seminar on Topics in Applied Statistics. (3-4) Seminar; three hours; discussion, one hour. Prerequisite(s): graduate standing. Additional prerequisites are required for some segments of this course; see departmental discussion and lectures by graduate students and faculty on topics related to student and faculty research. In some courses students will receive letter grades only. In others students may receive either a letter grade or Satisfactory (S) or No Credit (NC) grade; no petition is required, but students must see instructor for grading basis. The department will maintain a listing of all 255 segments and their unit value and grading basis.

STAT 281. Practical Problems in Statistics. (2) Seminar, two hours. Prerequisite(s): consent of instructor. A variety of practical statistical problems will be presented and discussed. Graded Satisfactory (S) or No Credit (NC).

STAT 288. Literature Seminar. (1) Seminar; one hour. Students will make oral presentations summarizing important research papers in the statistics literature. All graduate students are encouraged to participate. Topics may vary each term. Graded Satisfactory (S) or No Credit (NC).

STAT 290. Directed Studies. (1-6) Prerequisite(s): graduate standing and consent of instructor. Individual studies on specially selected topics in statistical applications. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

STAT 291. Individual Studies in Coordinated Areas. (1-6) Consultation, one to six hours. Prerequisite(s): graduate standing. A program of studies designed to assist candidates who are preparing for examinations. Open to M.S. and Ph.D. students; does not count toward the unit requirement for the M.S. degree. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

STAT 292. Concurrent Analytical Studies. (1-4) Research, three to twelve hours. Prerequisite(s): consent of instructor and concurrent enrollment in 100-series course. To be taken on an individual basis. Student will complete a graduate paper related to the 100-series course. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit.

STAT 293A-STAT 293B-STAT 293C. Statistical Consulting and Data Analysis. (2-4-2) Consultation, two to four hours. Prerequisite(s): STAT 160C, STAT 171 and consent of instructor. Students will consult with clients from a variety of disciplines, analyze real data, and write reports. Other areas important to the applied statistician will be covered, including how to write a technical report and how to prepare and present a technical talk. Graded Satisfactory (S) or No Credit (NC).

STAT 297. Directed Research. (1-6) Prerequisite(s): graduate standing and consent of instructor. Directed research in applications of statistics in biological studies, including computer simulation. Graded Satisfactory (S) or No Credit (NC).

STAT 299. Research for Thesis or Dissertation. (1-12) Prerequisite(s): graduate standing and consent of instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

PROFESSIONAL COURSE

STAT 302. College Teaching Practicum. (1-4) Practicum, three to twelve hours. Prerequisite(s): graduate standing and consent of instructor. Required of all teaching assistants in the department. Credit not applicable to graduate unit requirements. Supervised teaching in college level classes under the supervision of the course instructor. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

THEATRE

Subject abbreviation: THEA

D. Eric Barr, M.F.A., Chair
Department Office, 1339 Olmsted Hall
(909) 787-3343
http://www.music.ucr.edu/theatrehomepage.htm

Professors
D. Eric Barr, M.F.A.
Richard Hornby, Ph.D.
John C. Iacovelli, M.F.A.
Carlos Morton, Ph.D.


Professor Emeritus
Richard D. Risso, Ph.D.

Lecturers
Marc L. Longlois, M.F.A.
Kevin Morrissey, M.F.A.
Patricia A. Paine, M.F.A.

MAJOR

The Department of Theatre offers a Bachelor of Arts in Theatre. The major focuses on three broad areas of theatre — its literature, history, and criticism; performance, design, direction, and technology; and the elements of production. Students have the opportunity to write, perform, direct, and design. Three campus stages are available for rehearsals and performances: the 496-seat University Theatre with a proscenium stage, the modular Studio Theatre, and the Barn Theatre. State-of-the-art lighting and sound systems give every production professional quality.

Students are able to practice acting in faculty-directed shows, student productions, and class presentations. Special projects and studies are offered for advanced students to produce an original work or to study in more depth acting, directing, scenic design, or playwriting.

Student assistantships, work-study, Gluck Fellowships, and scholarships such as the Chancellor’s Performance Award and Arts Bridge are available to students. For further information or a department tour, call the Theatre Department, (909) 787-3343.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Humanities, Arts, and Social Sciences, in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The major requirements for the B.A. degree in Theatre are as follows:

Upper-division requirements (64 units)

1. Literature, History, Criticism requirement
   a) THEA 100, THEA 120A-THEA 120B-THEA 120C
   b) Twelve (12) units from THEA 121 (E-Z), THEA 123, THEA 124A-THEA 124B, THEA 125 (E-Z), THEA 126, THEA 191 (E-Z), or any other course

2. Performance, Direction, Playwriting, Screenwriting, Design, and Theatre Technology requirement
   a) THEA 101, THEA 102, THEA 109
   b) Twelve (12) units from THEA 110A-THEA 110B, THEA 111A-THEA 111B-THEA 111C, THEA 112, THEA 113 (E-Z), THEA 132, THEA 133, THEA 135, THEA 141, THEA 142, THEA 143, THEA 144, THEA 150A-THEA 150B-THEA 150C, THEA 164A-CRWT 164A, THEA 164B-CRWT 164B, THEA 164C-CRWT 164C, THEA 166A-THEA 166B-THEA 166C-CRWT 166A-CRWT 166B-CRWT 166C-FVC 166A-FVC 166B-FVC 166C

3. Production requirement
   Twelve (12) units of THEA 170 with two (2) units from each of the following areas: sets, costumes, and lighting/sound. Six of these units must be taken in residence.

Minor

The minor in Theatre follows the structure of the major requirements by exposing students to each of the areas that are essential to the creation of theatre, with the opportunity to take an additional course for depth or more exposure. The inclusion of THEA 170 (Advanced Dramatic Production) gives the students the opportunity to put course work into the proper context and provides them with a practical understanding of the workings and problems of production. The minor in Theatre provides students with a basic understanding in major areas of study including theatre literature, performance, and design. The minor also introduces the nonmajor to the discipline of Theatre, providing breadth for those students majoring in unrelated disciplines.

Requirements for the minor (20 units)

1. THEA 100, THEA 101, THEA 109
2. Four (4) units of THEA 170 (This 2-unit course must be taken twice, in two different areas, 2 units of which must be in residence.)
3. One 4-unit upper-division course selected from the department's Literature, History, Criticism area or the Performance, Direction, Playwriting, Screenwriting, Design, and Theatre Technology area.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Education Abroad Program

The Theatre Department encourages students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and its culture while taking courses which earn units toward graduation. Because strategy in choosing courses to be taken here and courses to be taken abroad varies depending on personal goals and the country visited, early planning is advised. Consult the department advisor for assistance. For further details, see Education Abroad Program under International Services Center in the Student Services section of this catalog.

A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

<table>
<thead>
<tr>
<th>LOWER-DIVISION COURSES</th>
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<tbody>
<tr>
<td>THEA 010. Introduction to Acting, (4)</td>
</tr>
<tr>
<td>Lecture, two hours; discussion, two hours. Prerequisite(s): none. Introduction to acting in theatre, film, television, and performance art. Through exercises, lectures, videos, and on-site visits, explores the work of actors and their collaborations with other artists in historical and contemporary settings. Recommended for non-majors. Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination.</td>
</tr>
<tr>
<td>THEA 021. Culture Clash: Studies in Latino Theatre and Film, (4)</td>
</tr>
<tr>
<td>Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to U.S. Latino theatre and film from 1965 to the present. Students read the major works of authors and examine important films and videos. Cross-listed with ENGL 021 and FVC 025.</td>
</tr>
<tr>
<td>THEA 022. Shakespeare in Performance, (4)</td>
</tr>
<tr>
<td>Lecture, two hours; workshop, two hours. Prerequisite(s): none. A study of contemporary Shakespearean productions on stage and on film. Considers the problems of adapting the text, creating visual elements, speaking the language, and performing the characters. Numerous videos depict a wide range of performance styles. Credit is awarded for only one of ENGL 018 or THEA 022.</td>
</tr>
<tr>
<td>THEA 038. From Hamlet to Babylon 5: Introduction to Design in Film, Television, and Theatre, (4)</td>
</tr>
<tr>
<td>Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to the design process for film, television, and theatre. Through exercises, lectures, videos, and on-site visits, students explore the design process, the influence of design on the viewer, and how looks are achieved in different media. Cross-listed with ART 028 and FVC 028.</td>
</tr>
<tr>
<td>THEA 050. Public Speaking, (4)</td>
</tr>
<tr>
<td>Lecture, three hours; discussion, one hour. The principles and practice of effective speech composition and delivery. The course is designed to provide students, in all areas, the opportunity to learn communicative skills which are essential in professional careers and community life.</td>
</tr>
</tbody>
</table>
THEA 070. Living Theatre. (4)
Lecture, three hours; discussion, one hour. The art of theatre through an introductory study of its component arts: dramatic literature, acting, directing, and mise en scene and their historical development. Lectures, demonstrations, special projects.

THEA 100. Play Analysis. (4)
Lecture, four hours. Prerequisite(s): upper-division standing or consent of instructor. Close analysis of selected plays: structure, character, imagery.

THEA 101. Introduction to Design. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. A comprehensive introduction to the design process. Topics include introductory principles and practices of set, costume, and lighting design; the general history of design; and career opportunities in the field.

THEA 102. Production Techniques for Theatre, Film, and Television. (4)
Lecture, three hours; laboratory, five hours. Prerequisite(s): upper-division standing or consent of instructor. A study of technical production practices, equipment, and architecture for theatre, film, and television design. The laboratory explores the application of production practices and principles of stagecraft in the fabrication of scenic, costume, lighting, and sound design.

Lecture, three hours; studio, two hours. Prerequisite(s): upper-division standing or consent of instructor. A comprehensive introduction to the process of acting. Topics include theories, history, and expressive skills related to theatrical performance.

THEA 110A. Acting: Fundamentals. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): THEA 109 or consent of instructor. A study of the acting fundamentals. Topics include concentration, motivation, and the psychophysical development of the actor's instrument. Explores basic approaches to characterization through monologues and introductory scene study.

THEA 110B. Acting: Techniques. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): THEA 110A or consent of instructor. An examination of acting techniques with an emphasis on the American Method. Topics include actions, objectives, and characterization. Includes analysis and performance of scenes from modern and contemporary drama.

THEA 111A. Acting: Styles. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): THEA 110A, THEA 110B, consent of instructor. Advanced scene study in classical theatre to develop the actor's skills with heightened language. Emphasis is on works by Chekhov. Topics include performance styles and working with the text to emphasize environment, actions, and intentions.

THEA 111B. Acting: Styles. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): THEA 111A, consent of instructor. Advanced scene study in English and European theatre to expand the actor's emotional range and character range. Emphasis is on works by Chekhov. Topics include performance styles and working with the text to emphasize environment, actions, and intentions.

THEA 111C. Acting: Styles. (4)
Lecture, two hours; studio, four hours. Prerequisite(s): THEA 111B, consent of instructor. Advanced scene study in contemporary theatre. Topics emphasized include preparing for auditions and entering the profession.

THEA 112. Dramatic Interpretation. (4)
Lecture, four hours. Vocal presentation of text; the use of various literary forms, emphasizing rhythm, tonality, diction, imagery, focus and phrasing as implements to convey the text, character, actions and intentions.

THEA 113 (E-Z). Movement for Actors and Performers. (4)
Lecture, two hours; workshop, two hours. Prerequisite(s): upper-division standing or consent of instructor. A study of movement techniques and theories for actors and performers. E. Stage Combat; M. Mime.

THEA 120A. Literature and History of the Theatre: The Classical Period through the Italian Renaissance. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the literature and history of the theatre from the classical period through the Italian Renaissance. Focuses on analysis of representative plays, theatrical architecture, and production modes.

THEA 120B. Literature and History of the Theatre: The Elizabethan Period through the Nineteenth Century. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the literature and history of the theatre from the Elizabethan period through the nineteenth century. Focuses on analysis of representative plays, theatrical architecture, and production modes.

THEA 120C. Literature and History of the Modern and Contemporary Theatre. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Examines the literature and history of the modern and contemporary theatre. Focuses on analysis of representative plays, theatrical architecture, and production modes.

THEA 121 (E-Z). World of the Play. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Studies of significant plays in the contexts of the social, intellectual, and artistic movements of their times. Each segment focuses on a single play and is offered simultaneously with the Theatre Department's production of the play. Related works and writings may also be studied.

THEA 122. The History of Scenic Design. (4)
Lecture, three hours; consultation, one hour. Prerequisite(s): upper-division standing or consent of instructor. Traces the development of theatre spaces and scenic design from their beginnings in the classical Greek theatre to the present as well as the evolution of scenic design into a highly specialized twentieth-century art form.

THEA 123A. American Theatre, 1900-1945. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Examination of the major American playwrights, theatrical figures, and movements from 1900 through World War II.

THEA 123B. American Theatre, 1945-Present. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. Examination of the major American playwrights, theatrical figures, and movements from World War II to the present.

THEA 125 (E-Z). History of the Theatre. (4)
Lecture, four hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the plays, playhouse, and players of the following theatrical eras: E. Classical Theatre; F. Medieval Theatre; G. Renaissance Theatre; I. Romantic Theatre; J. Realistic Theatre; K. Contemporary Theatre; M. American Theatre; N. Neo-Classical Theatre; W. American Theatre and Drama of the Great Depression; X. Experimental Theatre in America.

THEA 126A. History of Dress. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. A study of the psychological, sociological, and economic history of fashion and dress from 4000 B.C. to A.D. 1700.

THEA 126B. History of Dress. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): upper-division standing or consent of instructor. A study of the psychological, sociological, and economic history of fashion and dress from A.D. 1700 to the present.

THEA 127. Theories of the Modern Theatre. (4)
Lecture, four hours. Prerequisite(s): upper-division standing or consent of instructor. An examination of the major theories underlying twentieth-century theatre practice. Special attention is paid to the ideas of important theatre artists such as Constantin Stanislavsky, E. Gordon Craig, Antonin Artaud, and Bertolt Brecht.

THEA 132. Designing Light for Theatre, Film, and Television. (4)
Lecture, three hours; laboratory, four hours. Prerequisite(s): THEA 102 or consent of instructor. A survey of lighting design for theatre, film, and television. Students view and discuss examples of lighting design and participate in class projects. Develops skills associated with the creation and execution of a lighting design.

THEA 133. Design for Theatre. (4)
Lecture, four hours. Prerequisite(s): THEA 101. A study of theory, principles, and practice of design for theatre.

THEA 135. Costume Design for Theatre. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): THEA 101. A study of theory, principles, and practice of costume design for theatre.

THEA 141. Drafting Scenery for Theatre, Film, and Television. (4)
Lecture, four hours. Prerequisite(s): THEA 102 or consent of instructor. A study of basic drafting principles. Focuses on graphic skills and work habits needed to develop a fully documented scenic design. Topics include line weights, lettering, orthographic projection, auxiliary views, and mechanical perspective.

THEA 142. Costume Construction. (4)
Lecture, two hours; laboratory, six hours. Prerequisite(s): upper-division standing or consent of instructor. A theoretical and practical study of theatrical costume production. Topics include draping and flat pattern development, fabric, fitting, and sewing techniques. Costume projects are required. Sewing skills are helpful but not essential.

THEA 143. Scene Painting. (4)
Discussion, four hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the skills needed to translate scaled painter's elevations to full-size, two-dimensional and three-dimensional scene elements. Covers fundamental paint application techniques such as wet blending, glazing, dry brushing, lining, and spattering.
Theater, Film, and Television

THEA 144. Makeup for Theatre, Film, and Television. (4)
Discussion, four hours. Prerequisite(s): upper-division standing or consent of instructor. A study of the theory and practice of makeup for theatre, film, and television. Students complete advanced projects and a makeup research notebook. Includes demonstrations by industry professionals.

THEA 150A-THEA 150B-THEA 150C. Directing. (4-4-4)
Lecture, four hours. Prerequisite(s): THEA 110A, THEA 110B, or consent of instructor. History, theory, principles and techniques of staging the play.

THEA 164A. Beginning Playwriting. (4)
Seminar, three hours; discussion, one hour. Prerequisite(s): THEA 110A or CRWT 105 or consent of instructor. Seminar in the practice of playwriting centering on the construction of a plot. Cross-listed with CRWT 164A.

THEA 164B. Intermediate Playwriting. (4)
Seminar, three hours; discussion, one hour. Prerequisite(s): CRWT 164A/ THEA 164A. Seminar in the practice of playwriting. Revisions of works in progress with emphasis on character development and techniques for writing dialogue. Cross-listed with CRWT 164B.

THEA 164C. Advanced Playwriting. (4)
Seminar, three hours; discussion, one hour. Prerequisite(s): CRWT 164A/ THEA 164A. Seminar in the practice of playwriting. Playwrights' participation in staged readings of their work. With consent of instructor, course is repeatable to a maximum of 8 units. Cross-listed with CRWT 164C.

THEA 165A. Plays in Production. (4)
Workshop, eight hours. Prerequisite(s): CRWT 164A/ THEA 164A or CRWT 166A/FC 166A/ THEA 166A or consent of instructor. Development and preproduction of half-hour and one-hour plays written specifically for stage, soundstage, radio, television, or Web-based broadcasting. Students learn the basics of sound and video production to enhance their writing and rewriting process. Course is repeatable to a maximum of 8 units. Cross-listed with CRWT 167A.

THEA 165B. Plays in Production. (4)
Workshop, eight hours. Prerequisite(s): CRWT 167A/ THEA 165A or consent of instructor. Advanced production and postproduction of half-hour and one-hour drama (including comedy) for radio, video, or webcasting. Postproduction of previously taped shows. Course is repeatable to a maximum of 8 units. Cross-listed with CRWT 167B.

THEA 166A-THEA 166B-THEA 166C. Screenwriting. (4-4-4)
Lecture, two hours; discussion, two hours. Prerequisite(s): for CRWT 166A/FC 166A/ THEA 166A: CRWT 056 or consent of instructor; for CRWT 166B/FC 166B/THEA 166B: CRWT 166A/FC 166A or consent of instructor; for CRWT 166C/FC 166C/ THEA 166C: CRWT 166B/ FC 166B or consent of instructor. The fundamentals of screenwriting including story development, plotting, and characterization as they are used in creating a complete script for television or feature film. 166A: Introduction. 166B: From outline to first draft. 166C: Rewrites and writing for television formats. CRWT 166C/FC 166C/ THEA 166C is repeatable. Cross-listed with CRWT 166A-CRWT 166B-CRWT 166C and FC 166A-FC 166B-FC 166C.

THEA 170. Advanced Dramatic Production. (2-4)
Studio, ten to twenty hours. Prerequisite(s): consent of instructor; demonstrated ability in dramatic production. Advanced assignments in dramatic production, performance, and stage management. Course is repeatable.

THEA 176. Performing Arts of Asia. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A survey of music, dance, theater, and ritual in four major geocultural regions of Asia: Central, East, South, and Southeast. No Western music training is required. Course is repeatable to a maximum of 8 units. Cross-listed with ANTH 120, AST 120, DNCE 120, and MUS 120.

THEA 180 (E-Z). Theatre Practicum. (4)
Discussion, four hours. Prerequisite(s): upper-division standing or consent of instructor; for THEA 180E: THEA 100 or THEA 101 or THEA 102 or consent of instructor. An investigation of theatrical production theories and practices. L. Musical Comedy; M. Arts Management; Q. Plays in Progress; R. New Plays; S. Improvisation; T. Computer-Aided Design for Theatre.

THEA 190. Special Studies. (1-5)
Prerequisite(s): consent of the chair of the department. Course is repeatable to a maximum of 20 units.

THEA 191 (E-Z). Seminar in Theatre. (4)
Seminar; three hours; discussion, one hour. Prerequisite(s): CRWT 166A/ THEA 166A or consent of instructor. A changing seminar in such fields as playwriting, acting, directing, scenic design, theater history, and dramatic literature. M. American Frontier in American Drama; N. Theatre of Eugene O'Neill; S. Script to Production; W. Women in Theatre.

THEA 195. Senior Thesis. (1-4)
Thesis, three to twelve hours. Prerequisite(s): senior standing; consent of Department Chair. Open by invitation only. Presentation of a significant piece of creative work with faculty supervision. Course is repeatable to a maximum of 8 units.

THEA 199. Individual Internship in Theatre. (1-12)
Internship, two to twenty-four hours. Prerequisite(s): lower-division standing; consent of Department Chair. Open by invitation only. A form of experiential learning which encourages innovative approaches to introductory courses and provide an avenue for faculty to present courses that concentrate on their particular interests. UHP seminars expose students to methods of conceptualizing issues and framing questions that characterize disciplines. These seminars help prepare students for the independent research that upper-division honors demands. In the junior and senior years, each student in the UHP selects a topic for an honors project or thesis and pursues this topic under the supervision of an individual faculty member. The thesis or project is submitted at the end of the senior year. In both the upper division and lower division, the UHP challenges honors students to take an active role in shaping their education.

The program offers a variety of extracurricular activities. The UHP offers staff support for honors students, including support for fellowships, internships, applications to graduate schools, and summer programs. A reading room, seminar room, and lounge and working space with computer facilities are available to honors students.

Lower-Division Courses

Admission to lower-division honors is based on an application, high school grades, and aptitude and achievement test scores. Students take honors courses and participate in workshops, personal growth, and community service activities.

Upper-Division Honors

The upper-division UHP provides the student with the framework to produce a thesis or project, a substantial, independent product of scholarship, research, or creative activity. The structure is adaptable to almost any major and allows each student the flexibility to work with a faculty advisor to shape a research program to meet the ambitions of the project.

Outstanding students from most disciplines and majors can participate in the University Honors Program (UHP). The UHP lower-division curriculum provides special seminars, projects, and other courses designed to introduce honors students to the rewards of scholarship and research. First-year courses encourage innovative approaches to introductory courses and provide an avenue for faculty to present courses that concentrate on their particular interests. UHP seminars expose students to methods of conceptualizing issues and framing questions that characterize disciplines. These seminars help prepare students for the independent research that upper-division honors demands. In the junior and senior years, each student in the UHP selects a topic for an honors project or thesis and pursues this topic under the supervision of an individual faculty member. The thesis or project is submitted by the end of the senior year. In both the upper division and lower division, the UHP challenges honors students to take an active role in shaping their education.

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also apply or be nominated to the upper-
division UHP.

During the junior year, students narrow their
research focus, select a faculty supervisor, and
prepare to undertake the honors project. The
UHP provides support in all phases of this
planning. The honors project is usually under-
taken in the first two quarters of the senior
year and is completed well before graduation.

The completed thesis is submitted to the
faculty advisor and to a second faculty reader
for approval. The approved thesis, a cumula-
tive GPA of 3.4 in the major, and an upper-
division GPA of at least 3.50 qualify the student
for graduation with upper-division honors.

The honors designation appears on the official
transcript.

**Education Abroad Program**

The University Honors Program encourages
students to participate in the Education
Abroad Program (EAP). The EAP is an excel-
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about another country and its culture while
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For further details, see Education Abroad
Program under International Services Center
in the Student Services section of this catalog.

A list of participating countries is found under
Education Abroad Program in the Curricula
and courses section.

**Lower-Division Courses**

**ANTH 001H. Honors Cultural Anthropology. (4)**
Description under Anthropology.

**ANTH 002H. Honors Biology Anthropology. (4)**
Description under Anthropology.

**CHEM 01HA-CHEM 01HB-CHEM 01HC. Honors General Chemistry. (4-4-5)**
Description under Chemistry.

**CHEM 097H. Freshman Honors Project: Introduction to Research. (1-4)**
Description under Chemistry.

**CRWT 097H. Freshman Honors Project: Poetry. (4)**
Description under Creative Writing.

**ECON 003H. Honors Introduction to Microeconomics. (4)**
Description under Economics.

**ENGL 01HC. Honors Applied Intermediate Composition. (4)**
Description under English.

**ENSC 001H. Honors Natural Resources and the Environment. (4)**
Description under Environmental Science.

**ENSC 002H. Honors Environmental Quality. (4)**
Description under Environmental Science.

**ETST 001H. Honors Introduction to the Study of Race and Ethnicity. (4)**
Description under Ethnic Studies.

**ETST 012H/RLST 012H. Honors Religious Myth and Rituals. (4)**
Description under Ethnic Studies and Religious Studies.

**HIST 010H. Honors World History: Prehistory to 1500. (4)**
Description under History.

**HIST 015H. Honors World History: 1500 to 1900. (4)**
Description under History.

**HIST 020H. Honors World History: Twentieth Century. (4)**
Description under History.

**MATH 09HA-MATH 09HB-MATH 09HC. First Year Honors Calculus. (4-4-4)**
Description under Mathematics.

**PHIL 003H. Honors Introduction to Philosophy. (4)**
Description under Philosophy.

**PHIL 007H. Honors Introduction to Critical Thinking. (4)**
Description under Philosophy.

**PHIL 008H. Honors Introduction to Logic. (4)**
Description under Philosophy.

**POSC 010H. Honors American Politics. (4)**
Description under Political Science.

**RLST 005H. Honors Introduction to Asian Religions. (4)**
Description under Religious Studies.

**RLST 015H. Honors Death. (4)**
Description under Religious Studies.

**WMST 030H. Violence Against Women. (4)**
Description under Women’s Studies.

**Upper-Division Courses**

**AHS 195H. Senior Honors Thesis. (1-4)**
Description under Art History.

**BSAD 199H. Senior Honors Research. (4)**
Description under Business Administration.

**HIST 199H. Senior Honors Research. (1-5)**
Description under History.

**LOWER-DIVISION COURSES**

**HNPG 010A. First-Year Colloquium. (1)**
Colloquium, two hours. Prerequisite(s): open only to students in the University Honors Program who are freshmen or first-year transfer students. A series of presentations on basic research skills and resources available at UCR. Topics include campus computing, library resources, career planning, education abroad, and internships. A five to eight page research project is required. Graded Satisfactory (S) or No Credit (NC). Credit is awarded for only one of ENSC 010A, HNPG 001, or HNSS 002.

**HNPG 010B. First-Year Colloquium. (1)**
Colloquium, two hours. Prerequisite(s): open only to students in the University Honors Program who are freshmen or first-year transfer students. Presentations by professors from various UCR departments on their research. Teams of students interview the professors and present their results to the group. Graded Satisfactory (S) or No Credit (NC). Course is repeatable to a maximum of 2 units.

Seminar, three hours. Assignment of remaining hours varies from semester to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of one or more of the following areas: Mathematics, Statistics, and Computer Science. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

**HNPG 024 (E-Z). Honors Seminar in Biological Sciences. (4)**
Seminar, three hours. Assignment of remaining hours varies from semester to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of one or more of the Biological Sciences. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

**HNPG 025 (E-Z). Honors Seminar in Physical Sciences. (4)**
Seminar, three hours. Assignment of remaining hours varies from semester to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of one or more of the Physical Sciences. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

**HNPG 026 (E-Z). Honors Seminar in Natural Sciences and Mathematics. (4)**
Seminar, three hours. Assignment of remaining hours varies from semester to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the fron-
ties of one or more of the following areas: Natural Sciences and Mathematics. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 031 (E-Z). Honors Seminar in the Fine Arts. (4)
Seminar, three hours. Assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of one or more of the Fine Arts. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 033 (E-Z). Honors Seminar in Humanities. (4)
Seminar, three hours. Assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of one or more of the Humanities. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 034 (E-Z). Honors Seminar in Religious Studies. (4)
Seminar, three hours. Assignment of the remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of religious studies. Topics and instructors vary and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 036 (E-Z). Honors Seminar in History. (4)
Seminar, three hours. Assignment of the remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of history. Topics and instructors vary and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 037 (E-Z). Honors Seminar in Literature. (4)
Seminar, three hours. Assignment of the remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of literature. Topics and instructors vary and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 038 (E-Z). Honors Seminar in Philosophy. (4)
Seminar, three hours. Assignment of the remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of philosophy. Topics and instructors vary and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 039 (E-Z). Honors Seminar in Ethnic Studies in Humanities. (4)
Seminar, three hours. Assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of one or more of the following areas: Anthropology, Psychology, and Sociology. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 041 (E-Z). Honors Seminar in Economics and Political Science. (4)
Seminar, three hours. Assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of one or more of the following areas: Economics and Political Science. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 042 (E-Z). Honors Seminar in Anthropology, Psychology and Sociology. (4)
Seminar, three hours. Assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of one or more of the following areas: Anthropology, Psychology, and Sociology. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 043 (E-Z). Honors Seminar in Social Sciences. (4)
Seminar, three hours. Assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of one or more of the Social Sciences. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 049 (E-Z). Honors Seminar in Ethnic Studies in the Social Sciences. (4)
Seminar, three hours. Assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of one or more of the Social Sciences. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 059 (E-Z). Honors Seminar in Ethnic Studies in the Humanities or the Social Sciences. (4)
Seminar, three hours. Assignment of remaining hours varies from segment to segment. Prerequisite(s): admission to the University Honors Program or consent of instructor. Additional prerequisites may be required for segments of this course; see the University Honors Program. Introduces research and methods at the frontiers of Ethnic Studies in the Humanities or the Social Sciences. Topics and instructors vary from year to year and are chosen by the Honors Program Executive Committee in consultation with departments. Satisfactory (S) or No Credit (NC) grading is not available.

HNPG 097. Honors Lower-Division Research. (2-4)
Consultation, one to four hours; outside research, two to four hours; term paper, two to four hours. Prerequisite(s): admission to the University Honors Program or consent of instructor; consent of the University Honors Program. Independent research or projects completed in consultation with a faculty member. Satisfactory (S) or No Credit (NC) grading is not available. Course is repeatable to a maximum of 4 units.

UPPER-DIVISION COURSES
In the completeness of the University Upper-Division Honors thesis students work with individual departments under the 199H or 198 series to be awarded credit for their projects. See course descriptions under appropriate departments.

URBAN STUDIES MINOR

Subject abbreviation: UURS

Mason Gaffney, Ph.D., Chair
O Rice, 1206 W atkins Hall
(909) 787-5037, x1574

Committee in Charge
Gary A. Dymski, Ph.D. (Economics)
Mason Gaffney, Ph.D. (Economics/Management)
John M. Gamlin, Ph.D. (English)
Patricia Morton, Ph.D. (Art History)
Max Neiman, Ph.D. (Political Science)
Patricia O’Brien, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The Urban Studies minor is an adaptation of a well-developed interdisciplinary focus on urban concepts, issues, and problems in order to offer the chance for increased understanding of urban processes. The minor also provides preparation leading to increased employment opportunities at the municipal, state, or federal level, or to graduate work in one of several areas related to urban studies.
A minor is a set of courses focused on a single discipline or an interdisciplinary thematic area. There can be no substitution for the courses listed as constituting a minor without approval of the governing department or committee. There is no limit on the number of minors a student can declare. Students must declare the minor(s) before their final degree check before graduation, by completing a petition with the College of Humanities, Arts, and Social Sciences Student Affairs Office, the College of Natural and Agricultural Sciences Student Affairs Office, or the College of Engineering Student Affairs Office depending on their major. Prior approval by the department or committee offering the minor is required. The minor is noted on the transcript at the time the degree is conferred.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

LOWER-DIVISION COURSES

URST 010. The City: An Introduction. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): none. An introductory exploration of urban processes. Subjects examined include definition, form, structure and growth of urban regions as seen from the viewpoints of various disciplines. Cross-listed with SOC 010. Butler

URST 014. Popular Musics of the World. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. Introduction to issues surrounding popular and urban musics of the world, focusing on three major geocultural areas: Africa, Asia, and the Americas. Emphasizes the relationship between mass-mediated music and issues of cultural hegemony, resistance, and subversion. Analyzes the cultural impact of media technology on music performance and reception. Cross-listed with ETST 014 and MUS 014.

URST 021. Introduction to Architecture and Urbanism. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): none. An introduction to the built environment including buildings, gardens, and cities, examined in terms of historical, cultural, technological, and political factors. Emphasis on examples from Southern California. Cross-listed with AHS 021. Morton

UPPER-DIVISION COURSES

URST 143. Urban Sociology. (4)
Lecture, three hours. Prerequisite(s): SOC 001 or consent of instructor. A comparative examination of metropolitan and other urban communities, with emphasis on processes of urbanization. Cross-listed with SOC 143.

URST 146. Urban Economic Problems. (4)
Lecture, three hours. Prerequisite(s): ECON 003 or consent of instructor. The application of economic principles to the major problems of the modern urban community, such as poverty, discrimination, deterioration of environment and housing problems. Programs for alleviation or solution. Cross-listed with ECON 146.

URST 172. Urban Politics and Policies. (4)
Lecture, three hours; term paper and extra readings, three hours. Prerequisite(s): upper-division standing; POSC 010 or POSC 010H. A general analysis of urban politics in the United States. Topics include theories of urban politics, structure of political competition, leading political roles, and major policy problems. Cross-listed with POSC 172.

URST 182. Urban Problems. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing or consent of instructor. An interdisciplinary examination of selected urban problems such as civil disorders, transportation, housing, welfare, and planning. Cross-listed with HMDV 182 and SOC 182. Butler

URST 184. Modern Architecture. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017C or AHS 021/URST 021 or upper-division standing or consent of instructor. Modern architecture and its sources from 1800. Cross-listed with AHS 184. Morton

URST 185. Architectural Theory from Vitruvius to Venturi. (4)
Lecture, three hours; individual study, three hours. Prerequisite(s): AHS 017A or AHS 017B or AHS 017C or AHS 021/URST 021 or upper-division standing or consent of instructor. History of architectural thought from Vitruvius to the present, with emphasis on the modern period. Studies the major themes of architectural theory and investigates the relationship between ideas about architecture and architectural production. Cross-listed with AHS 185. Morton

WESTERN AMERICAN STUDIES MINOR

R.E. Taylor, Ph.D., Chair
Office, 1334 W atkins Hall
(909) 787-5521

Committee in Charge
Edna Bonacich, Ph.D. (Ethnic Studies and Sociology)
Piotr S. Górecki, Ph.D. (History)
R. E. Taylor, Jr., Ph.D. (Anthropology)
Ronald C. Tobey, Ph.D. (History)

Clifford E. Trazer, Ph.D. (History and Ethnic Studies)

Patricia O’Brien, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The Western American Studies minor is intended to provide the student with a basic understanding of the history and institutional development of the Western United States — the Great Plains, the Southwest, and California — including the geographical and cultural factors that have shaped their history.

Requirements for the Western American Studies minor are 20 units distributed as follows:

1. HISA 137, HISA 138

2. One course from each of the following groups:
   a) ETST 004/HIST 004, ETST 180/HISA 140, ETST 181/HISA 141, ETST 182/HISA 142, ETST 183/HISA 143
   b) ANTH 115E, ANTH 140F, ETST 110M
   c) ETST 108-I, ETST 108L, ETST 110K

History majors are not allowed to count HISA 137 or HISA 138 toward both their major and a minor in Western American Studies. If HISA 137 or HISA 138 is counted toward the major, then for the minor and additional course from (a) and an additional course from (b) are required.

A minor is a set of courses focused on a single discipline or an interdisciplinary thematic area. There can be no substitution for the courses listed as constituting a minor without approval of the governing department or committee. There is no limit on the number of minors a student can declare. Students must declare the minor(s) before their final degree check before graduation, by completing a petition with the College of Humanities, Arts, and Social Sciences Student Affairs Office, the College of Natural and Agricultural Sciences Student Affairs Office, or the College of Engineering Student Affairs Office depending on their major. Prior approval by the department or committee offering the minor is required. The minor is noted on the transcript at the time the degree is conferred.

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.
Adrienne Sims, E.D.D.  
(Gender Education and Resource Services)  
Linda Brewster Shearns, Ph.D. (Sociology)  
Erika Suderberg, M.F.A. (Art)  
Linda J. Tomko, Ph.D. (Dance)  
Nancy Jean Tubbs, M.S. (Lesbian, Gay Bisexual, and Transgender Resource Center)  
Carole-Anne Tyler, Ph.D. (English)  
Georgia C. Warnke, Ph.D. (Philosophy)  
Denva A. Weber, Ph.D. (History)  
Deborah S. Willis, Ph.D. (English)  
Traise Yamamoto, Ph.D. (English)

MAJOR

The Women's Studies Department offers a coherent interdisciplinary curriculum with a major field of study in the areas of gender and sexuality. Each student is required to take a total of 48 units.

Degree Requirements

University Requirements

See the Undergraduate Studies section for requirements that all students must satisfy.

College Requirements

See Degree Requirements, College of Humanities, Arts, and Social Sciences in the Undergraduate Studies Section, for requirements that students must satisfy.

Major Requirements

The major requirements for the B.A. degree in Women's Studies are as follows:

1. Lower-division requirements (12 units)
   a) WMST 001
   b) WMST 010 or MUS 005
   c) WMST 020

2. Upper-division requirements (36 units)
   a) WMST 100
   b) At least two of the following
      WMST 193, WMST 195, WMST 198-I

   c) Twenty-four (24) units of electives chosen from the list below with the following distribution requirements:
      (1) Four (4) units of course work focusing on African American women, Asian American women, Chicanas/Latinas, or Native American women in the United States or on women from societies in Latin America, Asia, the Middle East, or Africa
      (2) Four (4) units course work focusing on issues of sexuality, sexual orientation, sexual identification, or masculinity and femininity

Elective Course Work

ALT 131/AST 131 (Women in Asian Literature)  
ANTH 133 (Women in Cross-cultural Perspective)  
ANTH 164/LNST 164/WMST 164 (Women and Development in Latin America and the Caribbean)  
ECON 155/WMST 155 (Women's Labor and the Economy)  
ENGL 122 (Literature and Sexualities)  
ENGL 123A-123B (Women and Literature)  
ENGL 124A (Female Novelistic Tradition: The Eighteenth and Nineteenth Centuries)  
ENGL 124B (Female Novelistic Tradition: The Twentieth Century)  
ENGL 128 (Austen)  
ENGL 128N (George Eliot)  
ENGL 128Q (Dickinson)  
ENGL 128R (Woolf)  
ENGL 143 (E-Z)/FVC 143 (E-Z) (Gender, Sexuality, and Visual Cultures)  
ENGL 143P/FVC 143P (Film and Gender)  
ETST 113/HISA 134 (The African American Woman)  
ETST 114 (Contemporary Latina Writing in the U.S.)  
ETST 122 (Family, Sex Roles, and the Chicana)  
ETST 124 (The Chicana)  
ETST 131 (Race, Class, and Gender)  
FREN 122G (Men Writing Women: Women Writing Men)  
HISA 130/WMST 130 (Gender, Sex, and Sexuality in Early America)  
HISA 131/WMST 131 (Women in American History)  
HISE 148A (Women and Gender in Early Modern Europe, 1348-1800)  
HISE 148B (Women and Gender in Europe, 1800-present)  
ITAL 162 (Contemporary Italian Women Writers in Translation)  
POSC 174 (The Political Agenda and the Women's Movement)  
RLST 160/WMST 160 (Women and Religion)  
SOC 140 (The Sociology of Women)  
SOC 141 (Men and Masculinity)  
SOC 177E (Sex Roles)
SPN 111W (Women in Latin American Literature)
WMST 030 (Violence Against Women)
WMST 101 (New Directions in Women’s Studies)
WMST 108/PHIL 108 (Philosophical Issues of Race and Gender)
WMST 109/ANTH 109 (Women, Politics, and Social Movements: Global Perspectives)
WMST 126/MUS 126/ANTH 177 (Music and Gender in Cross-Cultural Perspectives)
WMST 140 (Reproduction: Policies, Politics, and Practices)
WMST 149/ANTH 149 (Gender, Kinship, and Social Change)
WMST 163/RLST 163 (The Women of Early Christianity)
WMST 170/AHS 165/HISE 133 (Women Artists in Renaissance Europe, 1400-1600)
WMST 175/ETST 175 (Gender, Ethnicity, and Borders)
WMST 190 (Special Studies)

Minor

The minor consists of 24 units distributed as follows:

1. Eight (8) units chosen from: WMST 001, WMST 010, WMST 020
2. Four (4) units from WMST 100 or WMST 193
3. Twelve (12) units of electives from the elective list above (No more than 4 units may be in WMST 190.)

See Minors under the College of Humanities, Arts, and Social Sciences in the Undergraduate Studies section of this catalog for additional information on minors.

Education Abroad Program

The Women’s Studies Department encourages students to participate in the Education Abroad Program (EAP). The EAP is an excellent opportunity to travel and learn more about another country and the culture while taking courses which earn units toward graduation. Because strategy in choosing courses to be taken abroad and courses to be taken vary depends on personal goals and the country visited, early planning is advised. Consult the department advisor for assistance. For further details, see Education Abroad Program under International Services Center in the Student Services section of this catalog. A list of participating countries is found under Education Abroad Program in the Curricula and Courses section.

LOWER-DIVISION COURSES

WMST 001. Gender and Sexuality. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. Introduction to theories of sex and gender differences, the origins of patriarchy, and variations in sexual behavior and sexual norms. This course fulfills the Social Sciences Requirement for the College of Humanities, Arts, and Social Sciences.

WMST 010. Women and Culture. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. The roles of women in cultural creation and production; the relation of women artists to the society of their time; the images of women in the art and literature of the modern world. Themes and periods covered may vary. This course fulfills the Humanities Requirement for the College of Humanities, Arts, and Social Sciences. Shapiro

WMST 020. Women, Feminism, and Society in a Global Perspective. (4)
Lecture, three hours; discussion, one hour. Prerequisite(s): none. An introduction to social, political, and legal issues surrounding women’s issues and feminist movements worldwide. Topics such as abortion, contraception, and sexual violence are examined within a comparative and international framework. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both. Chatterjee

WMST 030. Violence Against Women. (4)
Lecture, three hours; individual study, three hours. Addresses structural and interpersonal forms of violence against women and girls. Topics include sexual and physical abuse, rape and sexual assault, battering, body mutilation, forced sterilization or reproduction, sex selection, medical “silences,” political torture, and gender-specific socialization for victimization and aggression. Also discusses state and economic policies. Credit is awarded for only one of WMST 030 or WMST 030H.

WMST 030H. Violence Against Women. (4)
Seminar, three hours; individual study, three hours. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to WMST 030. Addresses structural and interpersonal forms of violence against women and girls. Topics include sexual and physical abuse, rape and sexual assault, battering, body mutilation, forced sterilization or reproduction, sex selection, medical “silences,” political torture, and gender-specific socialization for victimization and aggression. Also discusses state and economic policies. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of WMST 030 or WMST 030H.

UPPER-DIVISION COURSES

WMST 100. Gender Theory. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. A cross-cultural, multidisciplinary course investigating the development of feminist theory and exploring the construction of gender and sexuality with emphasis on the “female” and the “feminine” in a variety of cultural contexts. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both. Waller

WMST 108. Philosophical Issues of Race and Gender. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Investigates philosophical issues concerning race and gender. Themes include the role of cultural and biological criteria in defining these concepts; the roles of race and gender in personal identity; the nature of racism, sexism, and their variants; and policy implications such as affirmative action and the civil status of homosexual relationships. Cross-listed with PHIL 108. Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

WMST 109. Women, Politics, and Social Movements: Global Perspectives. (4)
Lecture, three hours; outside research, three hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to “Third World” women’s politics. Covers women’s politics from a global perspective. Although international in breadth, emphasis is placed on South Asia, sub-Saharan Africa, and the Caribbean. Cross-listed with ANTH 110. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

WMST 126. Music and Gender in Cross-Cultural Perspectives. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. An overview of gendered performance genres from a number of cultures. Seeks to familiarize the student with gender-specific music and notions of gender that are often constructed, maintained, transmitted, and transformed through music and performance. Designed for students interested in music, anthropology, and gender studies. Cross-listed with ANTH 177 and MUS 126. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

WMST 130. Gender, Sex, and Sexuality in Early America. (4)
Lecture, three hours; term paper, three hours. Prerequisite(s): upper-division standing or consent of instructor. Introduction to issues of gender, sex, and sexuality in the culture of early America. Based on both primary and secondary literature. Cross-listed with HIS 130. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

WMST 131. Women in American History. (4)
Lecture, three hours; extra reading, three hours. Prerequisite(s): upper-division standing or consent of instructor. Survey of the history of women in America covering changes both in attitudes toward women and in the activities of women at home, at work outside the home, and in various social and political movements. Cross-listed with HISA 131. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

Lecture, three hours; individual study, three hours. Prerequisite(s): upper-division standing. Examines reproductive policies, politics, and practices from a cross-cultural and historical perspective. Discusses political and economic processes and sociocultural dynamics, population control, sex preference, infanticide and neonatal neglect, adoption and fosterage, abortion, technologically assisted conception, and gestational surrogacy.
WMST 149. Gender, Kinship, and Social Change. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): WMST 001. Examines theories of gender and kinship, the formation of gender hierarchies and their uneven development, and the dynamics of "family" and gender in stratified social formations. Analyzes the relationship between family forms and political and economic processes. Cross-listed with ANTH 149.

WMST 155. Women's Labor and the Economy. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): upper-division standing or consent of instructor. Explores the social roles and literary constructs of early Christian women as evidenced in the New Testament, patristic, and Apocryphal writings. Also considers the significance of those textual traditions for later feminist theories. Cross-listed with RLST 163.

WMST 160. Women and Religion. (4)
Lecture, three hours; consultation, one hour.
Prerequisite(s): consent of instructor. Examination of attitudes toward and images of women in diverse religious traditions, including such issues as the presence and absence of women in leadership roles, women's spiritual experience, female founders of religious groups, and recent developments in feminist religious thought. Cross-listed with ETST 175. This course fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.

WMST 163. The Women of Early Christianity. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): upper-division standing or consent of instructor. Explores the social roles and literary constructs of early Christian women as evidenced in the New Testament, patristic, and Apocryphal writings. Also considers the significance of those textual traditions for later Western ideas about women's social roles, including traditional and feminist theories. Cross-listed with RIST 163.

WMST 164. Gender and Development in Latin America. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): upper-division standing or consent of instructor. Discusses the role and contribution of Latin American and Caribbean women within their societies. The effects of national economic development policies upon their status and their participation in and integration into the policy-making process are emphasized. Cross-listed with ANTH 164 and LNST 164.

WMST 170. Women Artists in Renaissance Europe, 1400-1600. (4)
Lecture, three hours; individual study, three hours.
Prerequisite(s): AHS 017B or upper-division standing or consent of instructor. Surveys the lives and work of women artists in Renaissance Europe from perspectives offered by the latest scholarly literature. Key topics considered are circumstances under which it was possible for women to become artists, how these women evolved from artists practicing in the cloistered convent to artists participating in the competitive public market place, what they painted, and who their patrons were. Cross-listed with AHS 165 and HISE 133.

WMST 175. Gender, Ethnicity, and Borders. (4)
Lecture, three hours; extra reading, three hours.
Prerequisite(s): ETST 001 or WMST 010 or upper-division standing. Examines literary, theatrical, and visual sites where the "in-between" space of border cultures is mapped. Materials include autobiographies, testimonial literature, films, novels, performance scripts, and art. The interplay of gender and ethnicity is the special focus. Cross-listed with ETST 175. This course fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.

WMST 179. Gender, Ethnicity, and Social Change. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): upper-division standing or consent of instructor. Students develop and present a research paper in Women's Studies on an interdisciplinary theme or problem that has been selected by the faculty member holding the seminar. Course is repeatable to a maximum of 8 units. This course fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences, but not both.

WMST 185. Senior Thesis. (4)
Term paper, twelve hours. Prerequisite(s): senior standing and consent of instructor. Students work independently with a faculty member to prepare a thesis. Course is repeatable to a maximum of 8 units.

WMST 188. Individual Internship. (4)
Internship, twelve hours. Prerequisite(s): upper-division standing and consent of instructor. Internship in a community agency or university outreach program related to Women's Studies. The internship is supervised by a Women's Studies faculty member and the agency or program coordinator. A project paper is required. Course is repeatable to a maximum of 8 units.

GRADUATE COURSE

WMST 254. Writing Women: Issues in Feminism(s), Representation, and Ethnographic Practice. (4)
Seminar, three hours; outside research, three hours.
Prerequisite(s): graduate standing or consent of instructor. Examines intersections of power, authority, and representation in the gendered methodologies entailed in the production of anthropological knowledge. A focus on postcolonial and feminist theorizing introduces students to novel debates about ethnographic writing and practices. Text, context, and reflexivity in writing are explored in depth. Cross-listed with ANTH 254. Chatterjee
Bourns Hall is home to The Marian and Rosemary Bourns College of Engineering. The College offers bachelor's degrees in Computer Science, and Chemical, Electrical, Environmental, and Mechanical Engineering, with master's and doctoral degrees in Computer Science, Electrical Engineering, and Chemical and Environmental Engineering. The 105,000-square-foot Bourns Hall is the largest building on campus, and includes offices, classrooms, and laboratories.
Dr. Bradley Hyman, Professor of Biology, reading a DNA sequence as an example of "new" genomics and bioinformatics initiatives on campus.
Faculty

BYRON ADAMS (1989)
Professor, Music
B.M., Jacksonville University;
M.M., University of Southern California;
D.M.A., Cornell University

MICHAEL E. ADAMS (1985)
Professor, Entomology, Cell Biology &
Neuroscience
A.B., Ph.D., University of California, Riverside

JAMES E. ADASKAVEG (1995)
Assistant Professor, Plant Pathology
B.S., University of Connecticut;
M.S., Ph.D., University of Arizona

ADALBERTO AGUIRRE, Jr. (1980)
Professor, Sociology
B.A., University of California, Santa Cruz;
M.A., Ph.D., Stanford University

ALAN D. AGULNICK (1998)
Assistant Professor, Biology
B.S., Carnegie Mellon University;
Ph.D., University of Pennsylvania

G. JOHN ANDERSEN (1990)
Professor, Psychology
B.A., M.A., University of California, Davis;
Ph.D., Utah State University

STEVEN R. ANGLE (1986)
Professor, Chemistry
B.A., University of California, Irvine;
M.S., University of California, Los Angeles;
Ph.D., University of California, Irvine

RUTH APROBERTS (1971)
Professor Emeritus, English
B.A., University of British Columbia;
M.A., University of California, Berkeley;
Ph.D., University of California, Los Angeles

JANET T. AREG (1990)
Professor, Environmental Sciences
B.S., Massachusetts Institute of Technology;
M.S., Ph.D., University of Michigan, Ann Arbor

JULIANNE E. ALLISON (1997)
Assistant Professor, Political Science
B.A., University of California, Southern California;
M.A., University of California, Davis;
Ph.D., University of California, Los Angeles

MICHAEL F. ALLEN (1998)
Associate Professor, Plant Pathology, Biology
B.S., Southwestern College;
M.S., Ph.D, University of Wyoming

JULIA N. BAILEY-SERRES (1990)
Associate Professor, Botany and Plant Sciences
B.A., University of Utah;
Ph.D., University of Edinburgh

MARY ANN BAKER (1976)
Professor Emeritus, Biomedical Sciences
B.A., University of Redlands;
M.A., University of California, Santa Barbara;
Ph.D., University of California, Los Angeles

ALEXANDER BALANDIN (1999)
Assistant Professor, Electrical Engineering
M.S., Moscow Institute of Physics and Technology
M.S.E.E., Ph.D., University of Notre Dame

JAMES G. BALDWIN (1978)
Professor, Nematology
B.S., Bob Jones University;
M.S., Ph.D., North Carolina State University, Raleigh

TARADAS BANDYOPADHYAY (1987)
Professor, Economics
B.A., M.A., University of Calcutta, India;
M.A, McMaster University;
Ph.D., Southern Methodist University

KENNETH N. BARISH (1996)
Assistant Professor, Physics
B.A., University of California, Santa Cruz;
M.S., Ph.D., Yale

KENNETH D. BARKIN (1968)
Professor, History
B.A., Brooklyn College; Ph.D., Brown University

D. Eric BARR (1975)
Professor, Theatre
B.F.A, M.F.A, Wayne State University, Detroit

LUDWIG BARTELS (2000)
Assistant Professor, Chemistry
B.S., Ph.D., Free University, Berlin, Germany

MATTHEW J. BARTH (1998)
Associate Professor, Electrical Engineering
M.S., Ph.D., University of California, Santa Barbara

THEODORE J. BARTH (1966)
Professor Emeritus, Mathematics
B.S., Regis College, Colorado;
M.S., Ph.D., University of Notre Dame
Uta Barth (1990)
Professor, Art
B.A., University of California, Davis;
M.F.A., University of California, Los Angeles

Salomon Bartnici-Garcia (1962)
Professor Emeritus, Plant Pathology
M.S., Instituto Politecnico Nacional, Mexico DF;
Ph.D., Rutgers University

Robert J. Beaver (1970)
Professor, Statistics
B.S., Bloomsburg State College;
M.S., Bucknell University;
M.S., Ph.D., University of Florida

Nancy E. Beckage (1990)
Professor, Entomology, Cell Biology & Neurosciences
B.S., University of Wisconsin, Madison;
Ph.D., University of Washington

Linda S. Bell (1989)
Associate Professor, History
B.A., Washington University;
Ph.D., University of California, Los Angeles

Thomas S. Bellows, Jr. (1981)
Professor, Entomology
B.S., New Mexico State University;
Ph.D., Dic., Imperial College, University of London

Gerardo Beni (1991)
Professor, Electrical Engineering
Laurea, Universita' di Firenze;
Ph.D., University of California, Los Angeles

Ward Beyermann (1991)
Associate Professor, Physics
A.B., University of California, Berkeley;
M.S., Ph.D., University of California, Los Angeles

Hershi Bhana (1999)
Assistant Professor, Ethnic Studies
B.A., University of Kansas;
M.A., Ph.D., University of California, Berkeley

Bir Bhana (1991)
Professor, Electrical Engineering
B.S., BHU Institute of Technology & Science;
M. Engr., Birla Institute of Technology & Science;
M.B.A., University of California, Irvine;
S.M.E.E., Massachusetts Institute of Technology;
Ph.D., University of Southern California

Laxmi Bhuyan (2000)
Professor, Computer Science and Engineering
B.S., M.S., Regional Engineering College, Rourkela, Sambalpur University, India;
Ph.D., Wayne State University

Janet B. Blacher (1979)
Professor, Education
A.B., Brown University;
Ph.D., University of North Carolina, Chapel Hill

Richard E. Block (1968)
Professor Emeritus, Mathematics
B.A., B.S., M.S., Ph.D., University of Chicago

Michelle Bloom (1997)
Assistant Professor, Comparative Literature
and Foreign Languages
B.A., Harvard University;
M.A., Ph.D., Brown University

David E. Bocian (1991)
Professor, Chemistry
B.S., North Carolina State University;
Ph.D., University of California, Berkeley

Christopher Bolton (1998)
Assistant Professor, Comparative Literature
and Foreign Languages
A.B., Harvard University;
M.A., Ph.D., Stanford University

Edna M. Bonachich (1969)
Professor, Ethnic Studies, Sociology
B. Soc. Sci., University of Natal, Durban,
South Africa;
M.A., Ph.D., Harvard University

James G. Borneman (1997)
Assistant Professor, Plant Pathology
B.S., M.S., Ph.D., Northern Illinois University

Carlton R. Bovell (1957)
Professor Emeritus, Biology
B.A., M.A., Brooklyn College;
Ph.D., University of California, Davis

Shaun Bowdle (1989)
Professor, Political Science
B.Sc., University College of Wales, Aberystwyth;
M.A., University of Essex;
Ph.D., Washington University, St. Louis

Elizabeth A. Bray (1985)
Associate Professor, Botany and Plant Sciences
B.A., Mount Holyoke College;
M.S., Ph.D., University of Minnesota

Gregory W. Bredbeck (1989)
Associate Professor, English
B.A., Ohio State University;
M.A., Ph.D., University of Pennsylvania

James P. Brennan (1996)
Associate Professor, History
B.A., American University;
M.A., Ph.D., Harvard University

Philip Brett (1991)
Professor, Music
B.A., M.A., Ph.D., King's College, Cambridge

John H. Briggs (1980)
Associate Professor, English
B.A., Harvard University;
M.A., Ph.D., University of Chicago

Steven G. Brunt (1993)
Professor, Sociology
B.A., University of California, Berkeley;
M.A., Ph.D., Harvard University

Christopher Buckley (1997)
Professor, Creative Writing
B.A., St. Mary's College of California;
M.A., San Diego State University;
M.F.A., University of California, Irvine

Curt Burgess (1992)
Associate Professor, Psychology
B.G.S., M.A., University of Nebraska, Omaha;
M.A., Ph.D., University of Rochester

Edgar W. Butler (1969)
Professor Emeritus, Sociology
B.A., California State University, Long Beach;
M.A., Ph.D., University of Southern California

Craig V. Byus (1977)
Professor, Biochemistry, Biomedical Sciences
A.B., Johns Hopkins University;
Ph.D., University of New Hampshire, Durham

Amalia Cabezas (2000)
Assistant Professor, Women's Studies
B.A., Pitzer College;
Ph.D., University of California, Berkeley

Robert C. Calfee (1998)
Professor, Education
B.A., M.A., Ph.D., University of California, Los Angeles

R. T. Carde (1996)
Professor, Entomology
B.S., Tufts University;
M.S., Ph.D., Cornell University

Richard A. Cardullo (1991)
Associate Professor, Biology
B.S., University of Michigan, Ann Arbor;
M.S., University of Massachusetts, Amherst;
Ph.D., Johns Hopkins University

Jerry S. Carlson (1966)
Professor Emeritus, Education
B.A., University of Washington;
M.S., University of South Dakota;
Ph.D., University of California, Berkeley
SAUL B. CARTER (1990)
Professor, Economics
B.S., New York University;
M.A., Ph.D., Stanford University

ANTONIO CASTRO NETO (1995)
Associate Professor, Physics
B.S., M.S., State University of Campinas;
Ph.D., University of Illinois, Urbana-Champaign

BRUCE L. CHALMERS (1967)
Professor, Mathematics
B.A., Harvard University;
M.S., Stanford University;
Ph.D., Stanford University

ANDREW C.S. CHANG (1971)
Professor, Environmental Sciences
B.S., National Taiwan University;
M.S., Virginia Polytechnic Institute and State University;
Ph.D., Purdue University

EDWARD T. CHANG (1992)
Associate Professor, Ethnic Studies
B.A., University of California, Berkeley;
M.A., University of California, Los Angeles;
Ph.D., University of California, Berkeley

MEI-CHU CHANG (1987)
Professor, Mathematics
B.S., National Taiwan University;
Ph.D., University of California, Berkeley

RUTH CHO (1997)
Assistant Professor, Psychology
B.A., University of California, Irvine;
M.A., University of Notre Dame;
Ph.D., University of California, Los Angeles

MARK A. CHAPPELL (1980)
Professor, Biology
B.A., University of California, Santa Cruz;
Ph.D., Stanford University

VIJAYANTHI CHARI (1991)
Professor, Mathematics
B.S., M.S., Ph.D., University of Bombay

PYA CHATTERJEE (1993)
Assistant Professor, Women’s Studies
B.A., Wellesley College;
M.A., Ph.D., University of Chicago

MARCELLE CHAUVET (1995)
Assistant Professor, Economics
B.S., M.S., University of Brasilia, Brazil;
M.A., Ph.D., University of Pennsylvania

JIE CHEN (1994)
Professor, Electrical Engineering
B.S., Northwestern Polytechnic;
M.A., M.S., Ph.D., University of Michigan, Ann Arbor

WILFRED CHEN (1994)
Associate Professor, Chemical and Environmental Engineering
B.S., University of California, Los Angeles;
Ph.D., California Institute of Technology

XU CHENG (1998)
Assistant Professor, Economics
B.A., Institute of International Relations, Beijing, China;
M.A., M.Phil., Ph.D., Columbia University

LUCILLE CHIA (1995)
Assistant Professor, History
B.A., University of Pennsylvania;
M.S., Ph.D., New York University;
M.A., Ph.D., Columbia University

CHRISTINE CHIARELLO (1996)
Professor, Psychology
B.A., M.A., State University of New York, Buffalo;
Ph.D., University of California, Berkeley

RONALD H. CHILCOTE (1963)
Professor Emeritus, Economics
B.A., Dartmouth College;
M.B.A., M.A., Ph.D., Stanford University

JOSEPH W. CHILDERS (1989)
Associate Professor, English
B.A., M.A., University of Arkansas;
M.Phil., Ph.D., Columbia University

MAREK CHOBIK (1989)
Professor, Computer Science and Engineering
M.S., Warsaw University;
Ph.D., Polish Academy of Sciences, Warsaw

ERIC L. CHRONISTER (1987)
Professor, Chemistry
B.S., University of California, Los Angeles;
Ph.D., University of Illinois

Y. PETER CHUNG (1989)
Associate Professor, Management
B.S., Sogang University, Seoul, Korea;
M.B.A., California State University, Los Angeles;
Ph.D., Ohio State University

STEVEN E. CLARK (1987)
Associate Professor, Psychology
B.A., Illinois State University;
Ph.D., Indiana University

MICHAEL T. COLE (1984)
Professor, Botany and Plant Sciences
B.S., Ph.D., University of California, Davis

TIMOTHY J. CLOSE (1990)
Associate Professor, Botany and Plant Sciences
B.S., University of California, San Diego;
M.S., Ph.D., University of California, Davis

MICHAEL D. COFFEE (1981)
Professor, Plant Pathology
B.S., Ph.D., University of Wales

THOMAS E. COGNOTII (1999)
Professor, History
A.B., University of Georgia;
Ph.D., Washington University

BRIAN N. SCHOTT (1994)
Assistant Professor, Biomedical Sciences
C.E.P., McGill University, Canada;
B.A., Brandeis University;
Ph.D., State University of New York at Albany

FREDERICK R. COHEN (2000)
Professor, Mathematics
B.A., Brandeis University;
Ph.D., University of Chicago

C. A. COLLINS (1998)
Assistant Professor, Mechanical Engineering
B.S., University of California, San Diego;
M.S., Ph.D., University of California, Irvine

SCOTT L. COLEMAN (1988)
Associate Professor, Sociology
B.A., M.A., Ph.D., University of California, Santa Cruz

DONALD A. COOKSEY (1982)
Professor, Plant Pathology
B.A., Albion College;
Ph.D., Oregon State University

CARLOS E. CORTÉS (1967)
Professor Emeritus, History
B.A., University of California, Berkeley;
M.A., Columbia University;
M.A., Ph.D., University of New Mexico

C. L. CRAMB (1971)
Professor, Philosophy
B.A., University of Colorado;
M.S.L., Yale University;
Ph.D., University of California, Los Angeles

DAVID M. CROHNS (1992)
Associate Professor, Environmental Sciences
B.S., North Carolina State University;
M.S., Ph.D., Cornell University

RALPH L. CROWDER (1995)
Associate Professor, Ethnic Studies
B.A., Hampton University;
M.A., University of Minnesota;
Ph.D., University of Kansas
DAVID E. CROWLEY (1990)
Associate Professor, Environmental Sciences
B.S., M.S., University of Kentucky;
Ph.D., Colorado State University

MARIA LIZ CRUZ TORRES (1996)
Assistant Professor, Anthropology
B.S., University of Puerto Rico, Colegio Universitario de Humacao;
M.A., Ph.D., Rutgers University

STEPHEN E. CULLENBERG (1988)
Associate Professor, Economics
B.A., Antioch College;
Ph.D., University of Massachusetts, Amherst

MARGARITA C. CURRÁS-COLLazo (1994)
Assistant Professor, Cell Biology & Neuroscience
B.S., Tulane University;
Ph.D., Ohio State University, Columbus

JOHN E. DE PILLIS (1965)
Professor Emeritus, Mathematics
B.S., University of California, Los Angeles;
M.A., Ph.D., University of California, Berkeley

JOSEPH W. ECKERT (1957)
Associate Professor, Biochemistry
B.S., University of California, San Diego;
M.S., Ph.D., University of California, Berkeley

ALICE A. EIGER (1994)
Professor, Education
B.S., University of Oregon;
M.A., Ph.D., University of California, Berkeley

MARGARET C. ELLISON (1990)
Assistant Professor, Biology
B.A., M.A., University of California, Berkeley;
Ph.D., University of California, Davis

ANTHONY E. EMERSON (1995)
Associate Professor, Electrical Engineering
B.S., University of California, Berkeley;
M.S., Ph.D., Stanford University

DAVID K. DEMPSEY (1970)
Associate Professor, English
B.A., University of California, Los Angeles;
M.A., Ph.D., University of California, Berkeley

DANIEL K. DEMason (1975)
Professor, Botany and Plant Sciences
B.S., University of Michigan, Ann Arbor;
Ph.D., University of California, Berkeley

BIPIN R. DESAI (1965)
Professor, Physics
B.S., University of Bombay;
M.S., University of Illinois;
Ph.D., University of California, Berkeley

SHARON A. DUFFY (1990)
Professor, Education
B.S., California State Polytechnic University, Pomona;
M.A., Ph.D., University of California, Riverside

ACHILLES DUGUICZYK (1982)
Professor, Biochemistry
M.S., Jagiellonian University, Poland;
Ph.D., University of California, San Francisco

MARY L. DROSER (1989)
Professor, Earth Sciences
B.S., University of Rochester;
M.A., State University of New York, Binghamton;
Ph.D., University of Southern California

BIPIN R. DESAI (1965)
Professor, Physics
B.S., University of Bombay;
M.S., University of Illinois;
Ph.D., University of California, Berkeley

MARY L. DROSER (1989)
Professor, Earth Sciences
B.S., University of Rochester;
M.A., State University of New York, Binghamton;
Ph.D., University of Southern California

BIPIN R. DESAI (1965)
Professor, Physics
B.S., University of Bombay;
M.S., University of Illinois;
Ph.D., University of California, Berkeley

SHARON A. DUFFY (1990)
Professor, Education
B.S., California State Polytechnic University, Pomona;
M.A., Ph.D., University of California, Riverside

ACHILLES DUGUICZYK (1982)
Professor, Biochemistry
M.S., Jagiellonian University, Poland;
Ph.D., University of California, San Francisco

MARY L. DROSER (1989)
Professor, Earth Sciences
B.S., University of Rochester;
M.A., State University of New York, Binghamton;
Ph.D., University of Southern California

BIPIN R. DESAI (1965)
Professor, Physics
B.S., University of Bombay;
M.S., University of Illinois;
Ph.D., University of California, Berkeley

SHARON A. DUFFY (1990)
Professor, Education
B.S., California State Polytechnic University, Pomona;
M.A., Ph.D., University of California, Riverside

ACHILLES DUGUICZYK (1982)
Professor, Biochemistry
M.S., Jagiellonian University, Poland;
Ph.D., University of California, San Francisco

MARY L. DROSER (1989)
Professor, Earth Sciences
B.S., University of Rochester;
M.A., State University of New York, Binghamton;
Ph.D., University of Southern California

BIPIN R. DESAI (1965)
Professor, Physics
B.S., University of Bombay;
M.S., University of Illinois;
Ph.D., University of California, Berkeley

MARY L. DROSER (1989)
Professor, Earth Sciences
B.S., University of Rochester;
M.A., State University of New York, Binghamton;
Ph.D., University of Southern California
J. WILLIAM GARY (1991)
Professor, Physics
B.S., Brown University;
Ph.D., University of California, Berkeley

MARY GAUVAIN (1992)
Professor, Psychology
B.A., University of California, Irvine;
M.A., Stanford University;
Ph.D., University of Utah

PAUL H. GELES (1992)
Associate Professor, Anthropology
B.A., Humboldt State University;
M.A., Pontificia Universidad Catolica;
Ph.D., Harvard University

JOHN GERDES (1998)
Assistant Professor, Management
B.S., M. Mech., Cornell University;
M.B.A., Lehigh University;
M.S., Ph.D., Stanford University

SARJEET S. GILL (1983)
Professor, Cell Biology & Neuroscience
B.S., McGill University, Canada;
Ph.D., University of California, Berkeley

DAVID K. GLIDDEN (1976)
Professor, Philosophy
B.A., Lawrence University;
M.A., Ph.D., Princeton University

RICHARD GODBEER (1989)
Associate Professor, History
B.A., Magdalen College, Oxford University;
Ph.D., Brandeis University

RICHARD D. GOEDEN (1965)
Professor, Entomology
B.S., M.S., Ph.D., University of Wisconsin

D.V. GOKHALE (1970)
Professor, Statistics
B.S., Fergusson College, Poona, India;
M.S., University of Poona, India;
Ph.D., University of California, Berkeley

ANN E. GOLDBERG (1995)
Assistant Professor, History
B.A., M.A., Ph.D., University of California, Los Angeles

ARTURIO GÓMEZ-POMPA (1986)
Professor, Botany and Plant Sciences
M.S., Ph.D., University Nacional Autonoma de Mexico

GLORIA GONZALEZ-RIVERA (1991)
Associate Professor, Economics
Lic., Universidad Complutense, Spain;
M.A., Ph.D., University of California, San Diego

PIOTR S. GORECKI (1989)
Associate Professor, History
A.B., University of Illinois, Urbana-Champaign;
M.A., J.D., Stanford University;
Ph.D., University of Chicago

ROBERT C. GRAHAM (1986)
Professor, Environmental Sciences
B.S., University of California, Davis;
M.S., Ph.D., University of California, Los Angeles

JONATHAN W. GREEN (1990)
Professor, Art, Art History
B.A., Brandeis University;
M.A., Harvard University

PAUL E. GREEN (1997)
Assistant Professor, Education
B.A., Dillard University;
M.Ed., University of New Orleans;
Ph.D., University of Virginia

HARRY W. GREEN, II (1993)
Professor, Earth Sciences
B.A., M.S., Ph.D., University of California, Los Angeles

FRANK M. GRESHAM (1991)
Professor, Education
B.S., Georgia State University;
M.Ed., Ph.D., University of South Carolina

NEIL E. GRETSKY (1967)
Associate Professor, Mathematics
B.S., California Institute of Technology;
M.S., Ph.D., Carnegie-Mellon University

KEITH B. GRIFFIN (1988)
Professor, Economics
B.A., Williams College;
Ph.D., Oxford University

ROBERT B. GRIFFIN (1963)
Professor Emeritus, Comparative Literature and Foreign Languages
B.A., University of California, Riverside;
Ph.D., Yale University

REINHOLD GRIMM (1990)
Professor, Comparative Literature and Foreign Languages
Ph.D., Universitat Erlangen, West Germany

ANDREW J. GROSOSKY (1989)
Associate Professor, Cell Biology & Neuroscience
A.B., Boston University;
S. M., Sc.D., Harvard University

ZHANG-DAN GUAN (2000)
Assistant Professor, Mathematics
B.S., Xiamen University, China;
Ph.D., University of California, Berkeley

NANCY G. GUERRA (1998)
Professor, Psychology
B.A., University of California, Los Angeles;
M.A., University of California, Santa Barbara;
Ph.D., Harvard University

GEORG M. GUGELBERGER (1970)
Professor, Comparative Literature and Foreign Languages
B.A., M.A., University of Freiburg, West Germany;
Ph.D., University of Iowa

JANG-TING GUO (1993)
Assistant Professor, Economics
B.A., National Taiwan University, Taiwan;
M.A., Ph.D., University of California, Los Angeles

SUSAN HACKWOOD (1990)
Professor, Electrical Engineering
B.C., Ph.D., University of Nebraska, Lincoln

DIMITRIOS GUNOPULOS (1998)
Assistant Professor, Computer Science and Engineering
Ph.D., University of Patras;
M.A., Ph.D., Princeton University

CHRISTOPHER HACON (2000)
Assistant Professor, Mathematics
B.A., University of Pisa;
Ph.D., University of California, Los Angeles

ROBERT HADDON (2000)
Professor, Chemistry, Chemical and Environmental Engineering
B.Sc., Melbourne University;
Ph.D., Pennsylvania State University
GEORGE E. HAGGERTY (1981)
Professor, English
B.A., College of the Holy Cross;
M.A., Ph.D., University of California, Berkeley

LEAH T. HAIMO (1980)
Professor, Biology
B.A., Washington University;
M.Phil., Ph.D., Yale University

ANTHONY E. HALL (1971)
Professor, Botany and Plant Sciences
B.S., Ph.D., University of California, Davis

STEPHANIE B. HAMMER (1986)
Associate Professor, Comparative Literature and Foreign Languages
B.A., Smith College;
M.A., Washington University;
Ph.D., University of North Carolina, Chapel Hill

KIMBERLY A. HAMMOND (1995)
Assistant Professor, Biology
B.A., Colorado State University;
M.A., State University of New York at Buffalo;
Ph.D., Colorado State University

RALPH HANNA, III (1966)
Professor Emeritus, English
B.A., Amherst College;
M.A., Ph.D., Yale University

ROBERT A. HANEMAN (1979)
Professor, Sociology
B.A., M.A., Ph.D., University of Wisconsin

E. MARK HANSON (1970)
Professor, Education, Management
B.S., M.Ed., University of Illinois;
Ph.D., University of New Mexico

J. DANIEL HARE (1984)
Professor, Entomology
B.A., Stanford University;
Ph.D., State University of New York

LAWRENCE H. HARPER (1970)
Professor, Mathematics
B.A., University of California, Berkeley;
Ph.D., University of Oregon

GLENN I. HATTON (1991)
Professor, Cell Biology & Neuroscience
B.A., North Central College;
M.A., Ph.D., University of Illinois, Urbana-Champaign

RANDOLPH C. HEAD (1992)
Associate Professor, History
A.B., Harvard College;
M.A., Ph.D., University of Virginia

ROBERT L. HEATH (1969)
Professor, Botany and Plant Sciences
B.S., California Institute of Technology;
M.S., University of Michigan, Ann Arbor;
Ph.D., University of California, Berkeley

STEVEN HELAND (1995)
Assistant Professor, Economics
B.A., M.S., Ph.D., University of California, Berkeley

IRVING G. HENDRICK (1965)
Professor Emeritus, Education
A.B., M.A., Whittier College;
Ed.D., University of California, Los Angeles

HELEN L. HENRY (1978)
Professor, Biochemistry
A.B., Ph.D., Washington University, St. Louis

JOHN M. HERAY (1995)
Assistant Professor, Entomology
B.S., M.S.C., University of Guelph, Canada;
Ph.D., Texas A & M University

PETER W. HICKMOTT (1999)
Assistant Professor, Psychology
B.A., Cornell University;
M.S., M.P.H., Ph.D., Yale University

JONATHAN T. HISKY (1999)
Assistant Professor, Political Science
B.A., University of North Carolina, Chapel Hill;
Ph.D., University of Pittsburgh

PAUL D. HOFFMAN (1992)
Associate Professor, Philosophy
B.A., University of Michigan;
Ph.D., University of California, Los Angeles

T. KEITH HOLLIS (1998)
Assistant Professor, Chemistry
B.A., Huntington College;
Ph.D., University of Chicago

JODIE S. HOLT (1982)
Professor, Botany and Plant Sciences
B.S., University of Georgia;
M.S., Ph.D., University of California, Davis

YANG-QIANG HONG (1983)
Associate Professor, Computer Science and Engineering
B.S., National Chiao-Tung University, Taiwan;
M.S., National Taiwan University;
Ph.D., University of Florida

RICHARD HORNBY (1991)
Professor, Theatre
B.S., Massachusetts Institute of Technology;
M.A., Ph.D., Tulane University

GINGER CHENG-CHI HSU (1990)
Associate Professor, Art History
B.A., National Taiwan University;
M.A., Ph.D., University of California, Berkeley

YU-CHEN HSU (1991)
Professor, Computer Science and Engineering
B.S., National Taiwan University;
M.S., Ph.D., University of Illinois, Urbana-Champaign

ANTHONY H.C. HUANG (1988)
Professor, Botany and Plant Sciences
B.S., National Taiwan University;
Ph.D., University of California, Santa Cruz

LINDA HUFF (2000)
Assistant Professor, English
B.A., Morgan State University;
M.A., Ph.D., University of Pittsburgh

NIGEL C. HUGHES (1990)
Associate Professor, Earth Sciences
B.S., University of Durham;
Ph.D., University of Bristol

BRADLEY C. HYMAN (1983)
Professor, Biology
B.A., University of California, San Diego;
Ph.D., University of California, Los Angeles

JOHN C. IACOVIELLI (1990)
Professor, Theatre
B.A., University of Nevada, Las Vegas;
M.F.A., New York University

MASAKO ISHI-KUNTZ (1987)
Associate Professor, Sociology
B.A., M.A., Ph.D., Washington State University

FRANK JACOBITZ (1998)
Assistant Professor, Mechanical Engineering
Diploma, Georg-August Universitat;
M.S., Ph.D., University of California, San Diego

QING JIANG (1998)
Professor, Mechanical Engineering
B.S., M.S., Huazhong University of Science and Technology;
Ph.D., California Institute of Technology

TAO JIANG (1999)
Professor, Computer Science and Engineering
B.S., University of Science & Technology of China;
Ph.D., University of Minnesota

DAVID A. JOHNSON (1984)
Professor, Biomedical Sciences
B.A., University of California, Berkeley;
M.A., Ph.D., University of California, San Francisco
HERBERT E. JOHNSON (1989)
Professor, Management
B.S., Michigan State University; M.B.A., University of Nebraska;
Ph.D., University of California, San Diego;
A.M., University of California, Los Angeles

AMIELA G. JONES (1991)
Professor, Art History
B.A., Harvard University;
M.A., University of Pennsylvania;
Ph.D., University of California, Los Angeles

HOWARD S. JUDELSON (1994)
Associate Professor, Plant Pathology
B.S., Cornell University;
Ph.D., University of Wisconsin

WILLIAM A. JURY (1974)
Professor, Environmental Sciences
B.S., University of Michigan, Ann Arbor;
M.S., Ph.D., University of Wisconsin

ISGOUHI KALOSHIAN (1997)
Assistant Professor, Nematology
B.S., M.S., American University of Beirut;
Ph.D., University of California, Riverside

RAY A. KEA (1991)
Professor, History
B.A., Howard University;
M.A., University of Ghana;
Ph.D., University of London

MICHAEL KEARNEY (1968)
Professor, Anthropology
B.A., Ph.D., University of California, Berkeley

NOEL T. KEE (1968)
Professor, Plant Pathology
B.S., M.S., Iowa State University;
Ph.D., University of Wisconsin

URI KEICH (1999)
Assistant Professor, Mathematics
B.Sc., Hebrew University of Jerusalem;
M.Sc., Technion-Israel Institute of Technology;
Ph.D., Courant Institute, New York University

PIERRE KELLER (1990)
Associate Professor, Philosophy
B.A., McGill University, Canada;
M.A., University of Heidelberg;
Ph.D., Columbia University

MARTIN J. KENNEDY (2000)
Assistant Professor, Earth Sciences
B.S., University of Wisconsin, Madison;
Ph.D., University of Adelaide, South Australia

DALE V. KENT (1987)
Professor, History
B.A., University of Melbourne, Australia;
Ph.D., University of London

AZIZUR R. KHAN (1988)
Professor, Economics
B.A., M.A., University of Dhaka, Bangladesh;
Ph.D., Cambridge University, England

SARKIS J. KHOURY (1984)
Professor, Management
B.S., Southeastern Massachusetts University;
M.B.A., Boston University;
Ph.D., University of Pennsylvania

SEUNG-CHUL KIM (2000)
Assistant Professor, Botany and Plant Sciences
B.S., Sung Kyun Kwan University, Korea;
M.S., Kent State University;
Ph.D., Ohio State University

KATHERINE A. KINNEY (1989)
Associate Professor, English
B.A., University of Washington;
M.A., Ph.D., University of Pennsylvania

KEITH C. KNAPP (1980)
Professor, Environmental Sciences
B.S., Iowa State University;
Ph.D., Johns Hopkins University

ALEXANDER KOROTKOV (2000)
Assistant Professor, Electrical Engineering
M.S., Ph.D., Moscow State University

AUGUSTINE J. KROSOWA (1995)
Associate Professor, Sociology
B.A., St. Paul’s College, Liberia;
M.A., University of Cincinnati;
Ph.D., Ohio State University

SRIKANTH KRISHNAMURTHY (2000)
Assistant Professor, Computer Science and Engineering
B.S., Birla Institute of Technology and Science, Pilani, India;
M.S., Concordia University, Montréal, Canada;
Ph.D., University of California, San Diego

DAVID B. KRONENFELD (1969)
Professor, Anthropology
B.A., Harvard University;
M.A., Ph.D., Stanford University

REBECCA KRICHEL (1991)
Associate Professor, History
B.A., University of Iowa;
M.A., Ph.D., University of California, Los Angeles

WERNER G. KUHR (1988)
Professor, Chemistry
B.S., M.S., Stevens Institute of Technology;
Ph.D., Indiana University

JOSH KUN (1999)
Assistant Professor, English
B.A., Duke University;
M.A., Ph.D., University of California, Berkeley

ANDREW H. KIDD (1996)
Assistant Professor, Political Science
B.A., Princeton University;
Ph.D., University of Chicago

ROGER LAKE (2000)
Associate Professor, Electrical Engineering
B.S.E.E., M.S.E.E., Ph.D., Purdue University

MICHEL L. LAPIDUS (1990)
Professor, Mathematics
M.S., Ph.D., Université Pierre et Marie Curie, France

PAUL G. LARSEN (2000)
Assistant Professor, Biochemistry
B.S., Calvin College; Ph.D., Purdue University

JOHN C. LAUSEN (1991)
Professor, Political Science
A.B., J.D., Harvard University;
M.A., Ph.D., Johns Hopkins University

TAE-HWY LEE (1995)
Associate Professor, Economics
B.A., Seoul National University, Korea;
Ph.D., University of California, San Diego

TIEH-CHANG LEE (1974)
Professor, Earth Sciences
B.S., National Taiwan University;
M.S., University of Idaho;
Ph.D., University of Southern California

JOHN LETEY, JR. (1959)
Professor, Environmental Sciences
B.S., Colorado State University;
Ph.D., University of Illinois

JULES F. LEVIN (1969)
Professor, Comparative Literature and Foreign Languages
B.A., M.A., Ph.D., University of California, Los Angeles

PING LIAO (1991)
Associate Professor, Electrical Engineering
B.S., National Chengchi University, Taiwan;
M.S., Illinois State University;
Ph.D., University of Florida
MARK I. LICHBACH (1998)
Professor, Political Science
B.A., Brooklyn College; M.A., Brown University;
Ph.D., Northwestern University

KEH-SHIN LI (1978)
Professor, Statistics
B.S., National Taiwan Normal University;
M.A., Ph.D., University of California, San Diego

SHERI J. LILLARD (1998)
Assistant Professor, Chemistry
B.S., San Diego State University;
Ph.D., Iowa State University

XIAO-SONG LIN (1995)
Professor, Mathematics
B.S., Nanking Institute of Posts and Telecommunications;
M.S., Beijing University; Ph.D., University of California, San Diego

VICTOR D. LIPPFIT (1971)
Professor, Economics
B.A., Harvard University;
M.A., Ph.D., Yale University

XUAN LIU (1995)
Assistant Professor, Biochemistry
M.D., Beijing Medical University, Beijing, China;
Ph.D., West Virginia University, Morgantown, West Virginia

BRIAN D. LLOYD (1993)
Associate Professor, History
B.A., West Virginia University;
M.A., Ph.D., University of Michigan

Tiffany A. López (1997)
Assistant Professor, English
B.A., California State University, Sacramento;
M.A., Ph.D., University of California, Santa Barbara

ELIZABETH M. LORD (1978)
Professor, Botany and Plant Sciences
B.A., University of Massachusetts, Amherst;
Ph.D., University of California, Berkeley

Carol J. Lowell (1980)
Professor, Botany and Plant Sciences
B.A., University of Massachusetts, Amherst;
M.A., Eastern Nazarene College;
M.S., Ph.D., University of Rhode Island

Ronald O. Loveridge (1965)
Associate Professor, Political Science
B.A., Pacific University;
M.A., Ph.D., Stanford University

Richard A. Luben (1976)
Professor, Biochemistry, Biomedical Sciences
B.S., University of Arkansas, Little Rock;
Ph.D., University of Arkansas for Medical Sciences

Robert F. Luck (1972)
Professor, Entomology
B.S., M.S., Ph.D., University of California, Berkeley

Adam J. Lukaszewski (1989)
Professor, Botany and Plant Sciences
B.Sc., M.Sc., Agricultural University, Warsaw;
Ph.D., Polish Academy of Sciences, Poznan

Lanny J. Lund (1971)
Professor, Environmental Sciences
B.S., M.S., University of Nebraska;
Ph.D., Purdue University

René T.A. Lysloff (1996)
Assistant Professor, Music
B.A., University of Wisconsin at Madison;
M.A., University of Hawaii;
Ph.D., University of Michigan

Christian Y. Lytle (1993)
Associate Professor, Biomedical Sciences
B.A., M.A., University of California, Santa Barbara;
Ph.D., Duke University

Sonja Dubomisky (1994)
Assistant Professor, Psychology
A.B., Harvard University;
Ph.D., Stanford University

Ernest S. Ma (1987)
Professor, Physics
B.S., California Institute of Technology;
Ph.D., University of California, Irvine

Douglas E. MacLaughlin (1969)
Professor, Physics
B.A., Amherst;
Ph.D., University of California, Berkeley

Donald L. MacMillan (1967)
Professor, Education
B.A., Western Reserve University, Cleveland;
M.A., Ed.D., University of California, Los Angeles

Monica A. Madore (1986)
Associate Professor, Botany and Plant Sciences
B.S., M.S., Carleton University;
Ph.D., University of Guelph, Canada

Bened Magnus (1968)
Professor, Philosophy and Humanities
B.A., City University of New York;
Ph.D., Columbia University

Shanker Mahalingam (2000)
Professor, Mechanical Engineering
B.Tech., Indian Institute of Technology;
M.S., State University of New York, Stony Brook;
Ph.D., Stanford University

Michael J. Marsella (1997)
Assistant Professor, Chemistry
B.S., University of Rhode Island;
Ph.D., University of Pennsylvania

Joel W. Martin (2000)
Professor, History, Religious Studies
B.A., Birmingham-Southern College;
M.T.S., Harvard University;
Ph.D., Duke University

Ernest Martinez (2000)
Assistant Professor, Biochemistry
M.S., Ph.D., University of Lausanne, Switzerland

Manuela Martins-Green (1993)
Assistant Professor, Cell Biology & Neuroscience
B.S., University of Lisbon;
M.S., University of California, Riverside;
Ph.D., University of California, Davis

Alexandra Marvanski (1988)
Associate Professor, Sociology
B.S., M.A., University of California, Riverside;
M.A., Ph.D., University of California, Irvine

Dmitri Maslov (1995)
Assistant Professor, Biology
M.S., Ph.D., Moscow State University

Mark R. Matsimoto (1994)
Professor, Chemical and Environmental Engineering
B.S., University of California, Irvine;
M.S., Ph.D., University of California, Davis

David Mavers (1995)
Professor, Management
B.S., U.S. Naval Academy, Annapolis
M.B.A., University of California, Berkeley
Ph.D., University of Rochester

Kathleen A. McHugh (1991)
Assistant Professor, Comparative Literature and Foreign Languages
B.A., M.A., University of Florida;
Ph.D., Indiana University
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Education Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael A. McKibben (1984)</td>
<td>Associate Professor, Earth Sciences</td>
<td>B.S., M.S., University of California, Riverside; Ph.D., Pennsylvania State University</td>
</tr>
<tr>
<td>William W. Megenney (1969)</td>
<td>Professor, Hispanic Studies</td>
<td>B.A., Rutgers University; M.A., Ph.D., University of New Mexico</td>
</tr>
<tr>
<td>Rajesh K. Mehra (1991)</td>
<td>Assistant Professor, Cell Biology &amp; Neuroscience</td>
<td>B.Sc., M.Sc., Panjab University, India; Ph.D., The Rowett Research Institute &amp; Aberdeen University, U.K.</td>
</tr>
<tr>
<td>Thomas Meixner (1999)</td>
<td>Assistant Professor, Environmental Sciences</td>
<td>B.S., University of Maryland at College Park; M.S., Ph.D., University of Arizona</td>
</tr>
<tr>
<td>John A. Mence (1974)</td>
<td>Professor, Plant Pathology</td>
<td>B.S., M.S., University of Minnesota; Ph.D., North Carolina State University</td>
</tr>
<tr>
<td>Kathleen E. Metz (1989)</td>
<td>Associate Professor, Education</td>
<td>B.S., Earlham College; M.S.Ed., University of Pennsylvania; Ed.D., University of Massachusetts</td>
</tr>
<tr>
<td>Walter H. Metzner (1991)</td>
<td>Associate Professor, Biology</td>
<td>Diploma, Ph.D., University of Munich</td>
</tr>
<tr>
<td>Georg Michels (1994)</td>
<td>Associate Professor, History</td>
<td>B.A., Universität Goettingen; M.A., University of California, Los Angeles; A.M., Ph.D., Harvard University</td>
</tr>
<tr>
<td>M. Mark Midland (1975)</td>
<td>Professor, Chemistry</td>
<td>B.S., Iowa State University; Ph.D., Purdue University</td>
</tr>
<tr>
<td>Jocelyn G. Millar (1988)</td>
<td>Professor, Entomology</td>
<td>B.S., Ph.D., Simon Fraser University, Canada</td>
</tr>
<tr>
<td>Milton Miller (1955)</td>
<td>Professor Emeritus, English</td>
<td>B.A., M.A., Ph.D., University of Wisconsin, Madison</td>
</tr>
<tr>
<td>Thomas A. Miller (1969)</td>
<td>Professor, Entomology</td>
<td>B.A., Ph.D., University of California, Riverside</td>
</tr>
<tr>
<td>Richard A. Minnich (1980)</td>
<td>Professor, Earth Sciences</td>
<td>B.A., M.A., University of California, Riverside; Ph.D., University of California, Los Angeles</td>
</tr>
<tr>
<td>Alfredo M. Miranda (1974)</td>
<td>Professor, Ethnic Studies, Sociology</td>
<td>B.A., Illinois State University; M.A., Ph.D., University of Nebraska; J.D., Stanford University</td>
</tr>
<tr>
<td>Douglas E. Mitchell (1972)</td>
<td>Professor, Education</td>
<td>B.M.E., Rensselaer Polytechnic Institute; B.D., Chicago Theological Seminary; Ph.D., Claremont Graduate School</td>
</tr>
<tr>
<td>Umar Mohideen (1994)</td>
<td>Associate Professor, Physics</td>
<td>M.S., Pennsylvania State University; Ph.D., Columbia University</td>
</tr>
<tr>
<td>Mart L. Molle (1994)</td>
<td>Professor, Computer Science and Engineering</td>
<td>M.Sc., Queen’s University; Ph.D. University of California, Los Angeles</td>
</tr>
<tr>
<td>Kathleen Montgomery (1990)</td>
<td>Associate Professor, Management</td>
<td>B.A., American University, Washington, D.C.; M.A., Ph.D., New York University</td>
</tr>
<tr>
<td>Joseph G. Morse (1981)</td>
<td>Professor, Entomology</td>
<td>B.S., Cornell University; M.S., Ph.D., Michigan State University</td>
</tr>
<tr>
<td>Carlos Morton (1990)</td>
<td>Professor, Theatre</td>
<td>B.A., University of Texas, El Paso; M.F.A., University of California, San Diego; Ph.D., University of Texas, Austin</td>
</tr>
<tr>
<td>Patricia A. Morton (1994)</td>
<td>Assistant Professor, Art History</td>
<td>B.A., Yale University; M.Arch., Columbia University; Ph.D., Princeton University</td>
</tr>
<tr>
<td>Thomas H. Morton (1981)</td>
<td>Professor, Chemistry</td>
<td>B.A., Harvard University; Ph.D., California Institute of Technology</td>
</tr>
<tr>
<td>Leonard J. Mueller (1998)</td>
<td>Assistant Professor, Chemistry</td>
<td>B.S., University of Rochester; Ph.D., California Institute of Technology</td>
</tr>
<tr>
<td>Ashok K. Mulchandan (1991)</td>
<td>Professor, Chemical and Environmental Engineering</td>
<td>B.Tech., Nagpur University; M.Tech., Indian Institute of Technology; Ph.D., McGill University, Canada</td>
</tr>
<tr>
<td>Mir S. Mulla (1956)</td>
<td>Professor, Entomology</td>
<td>B.S., Cornell University; Ph.D., University of California, Berkeley</td>
</tr>
<tr>
<td>Bradley A. Mullins (1982)</td>
<td>Professor, Entomology</td>
<td>B.S., M.S., University of Tennessee; Ph.D., Cornell University</td>
</tr>
<tr>
<td>Caroline P. Murphy (1998)</td>
<td>Assistant Professor, Art History</td>
<td>B.A., Ph.D., University College, London</td>
</tr>
<tr>
<td>Carolyn B. Murray (1980)</td>
<td>Associate Professor, Ethnic Studies, Psychology</td>
<td>B.A., Wayne State University; M.A., Ph.D., University of Michigan, Ann Arbor</td>
</tr>
<tr>
<td>Marvin Nachman (1958)</td>
<td>Professor Emeritus, Psychology</td>
<td>B.A., New York University; M.A., Ph.D., Boston University</td>
</tr>
<tr>
<td>Jonathan Nagler (1992)</td>
<td>Associate Professor, Political Science</td>
<td>B.A., Harvard University; M.S., Ph.D., California Institute of Technology</td>
</tr>
<tr>
<td>Wald J. Najjar (2000)</td>
<td>Associate Professor, Computer Science and Engineering</td>
<td>B.E., American University of Beirut; M.S., Ph.D., University of Southern California</td>
</tr>
<tr>
<td>Ethan Nasreddin-Longo (1995)</td>
<td>Assistant Professor, Music</td>
<td>B.A., Amherst College; Ph.D., University of Chicago</td>
</tr>
<tr>
<td>Armando Navarro (1992)</td>
<td>Professor, Ethnic Studies</td>
<td>B.A., Claremont Men’s College; Ph.D., University of California, Riverside</td>
</tr>
<tr>
<td>Max Neiman (1973)</td>
<td>Professor, Political Science</td>
<td>B.A., University of Illinois, Chicago University Center; M.A., Ph.D., University of Wisconsin</td>
</tr>
<tr>
<td>Sally Allen Ness (1990)</td>
<td>Associate Professor, Dance, Anthropology</td>
<td>B.A., University of Idaho, Moscow; C.M.A, Laban Institute of Movement Studies; Ph.D., University of Washington</td>
</tr>
</tbody>
</table>
RICHARD S. NEWMAN (1986)
Associate Professor, Education
B.A., Lehigh University;
M.A., Ph.D., University of Michigan, Ann Arbor;
Ed.M., Boston University

JOSEPH M. NORBECK (1991)
Professor, Chemical and Environmental Engineering
B.S., Ph.D., University of Nebraska

ANTHONY W. NORMAN (1963)
Professor, Biochemistry, Biomedical Sciences
A.B., Oberlin College;
M.S., Ph.D., University of Wisconsin, Madison

EUGENE A. NOTHINAGEL (1983)
Professor, Botany and Plant Sciences
B.A., University of Minnesota;
M.S., Ph.D., Cornell University

LEONARD P. NUNNEY (1980)
Professor, Biology
B.S., University of Sussex, England;
Ph.D., University of Nottingham

VIVIAN-LEE NYITRAY (1991)
Associate Professor, Comparative Literature and Foreign Languages, Religious Studies
A.B., Syracuse University;
A.M., Ph.D., Stanford University

PATRICIA O'BRIEN (1999)
Professor, History
B.A., Regis College;
M.A., Ph.D., Columbia University

JUNE E. O'CONNOR (1973)
Professor, Religious Studies
B.A., Mundelein College;
M.A., Marquette University;
Ph.D., Temple University

JOHN OCHOA (1998)
Assistant Professor, Hispanic Studies
A.B., Vassar College;
Ph.D., Yale University

J. KEITH ODDSON (1967)
Associate Professor, Mathematics
B.S., University of Toronto;
M.S., Massachusetts Institute of Technology;
Ph.D., University of Maryland

RODNEY T. OGAWA (1991)
Professor, Education
B.A., M.A., University of California, Los Angeles;
M.A., Occidental College;
Ph.D., Ohio State University

DAVID D. OGSBYS (2000)
Assistant Professor, Earth Sciences
B.A., Carleton College;
M.A., Ph.D., University of California, Santa Barbara

WILLIAM H. OKAMURA (1967)
Professor, Chemistry
B.S., University of California, Los Angeles;
Ph.D., Columbia University

AMY A. ONIGI (1999)
Assistant Professor, English
B.A., Bryn Mawr College;
M.A., University of Texas, Austin;
Ph.D., Cornell University

RAYMOND L. ORBACH (1992)
Professor, Physics
B.S., California Institute of Technology;
Ph.D., University of California, Berkeley

FLORA I. ORTIZ (1972)
Professor, Education
B.M., University of Denver;
M.A., Ph.D., University of New Mexico

STEVEN F. OSTROW (1992)
Associate Professor, Art History
B.A., McGill University;
M.A., Oberlin College;
M.F.A., Ph.D., Princeton University

LEWIS A. OWEN (1988)
Assistant Professor, Earth Sciences
B.S., Imperial College, University of London;
Ph.D., University of Leicester

DANIEL J. OZER (1991)
Associate Professor, Psychology
B.A., M.A., College of William and Mary;
Ph.D., University of California, Berkeley

REBA N. PAGE (1987)
Professor, Education
B.A., Washington University;
M.S.A., Johns Hopkins University;
Ph.D., University of Wisconsin, Madison

TIMOTHY D. PAINE (1986)
Professor, Entomology
B.A., B.S., Ph.D., University of California, Davis

JUAN VICENTE PALERM (1993)
Professor, Anthropology
Certificate, Licenciatura, Universidad Complutense de Madrid
Ph.D., Universidad Iberoamericana, Mexico

STEPHEN K. PARK (1985)
Professor, Earth Sciences
B.S., University of California, Riverside;
Ph.D., Massachusetts Institute of Technology

ROSS D. PARKE (1990)
Professor, Psychology
B.A., M.A., University of Toronto;
Ph.D., University of Waterloo

DAVID R. PARKER (1988)
Associate Professor, Environmental Sciences
B.S., University of Vermont;
M.S., Oregon State University;
Ph.D., Virginia Polytechnic Institute and State University

ROBERT NASH PARKER (1996)
Professor, Sociology
B.A., Brown University;
M.A., Indiana University;
Ph.D., Duke University

VLADIMIR PARPURA (2000)
Assistant Professor, Cell Biology & Neuroscience
M.D. University of Zagreb, Croatia;
Ph.D. Iowa State University

JAMES A. PARR (1990)
Professor, Hispanic Studies
B.A., M.A., Ohio University;
Ph.D., University of Pittsburgh

DOUGLAS M. PARROTT (1971)
Professor Emeritus, Religious Studies
B.A., Hamilton College;
M.Div., S.T.M., Union Theological Seminary;
Ph.D., Graduate Theological Union

ROBERT W. PATCH (1988)
Associate Professor, History
B.A., University of Illinois, Urbana-Champaign;
Ph.D., Princeton University

PRASANTA K. PATTANAIK (1991)
Professor, Economics
B.A., Utkal University, Orissa, India;
M.A., Ph.D., University of Delhi, India

THOMAS H. PAYNE (1967)
Associate Professor, Computer Science and Engineering
B.S., Marquette University;
M.S., Ph.D., University of Notre Dame

IVAN B. PENKOV (1991)
Professor, Computer Science and Engineering
B.A., Utkal University, Orissa, India;
M.A., Ph.D., University of Delhi, India

JUAN VICENTE PALERM (1993)
Professor, Anthropology
Certificate, Licenciatura, Universidad Complutense de Madrid
Ph.D., Universidad Iberoamericana, Mexico

STEPHEN K. PARK (1985)
Professor, Earth Sciences
B.S., University of California, Riverside;
Ph.D., Massachusetts Institute of Technology

ROBERT NASH PARKER (1996)
Professor, Sociology
B.A., Brown University;
M.A., Indiana University;
Ph.D., Duke University

VLADIMIR PARPURA (2000)
Assistant Professor, Cell Biology & Neuroscience
M.D. University of Zagreb, Croatia;
Ph.D. Iowa State University

JAMES A. PARR (1990)
Professor, Hispanic Studies
B.A., M.A., Ohio University;
Ph.D., University of Pittsburgh

DOUGLAS M. PARROTT (1971)
Professor Emeritus, Religious Studies
B.A., Hamilton College;
M.Div., S.T.M., Union Theological Seminary;
Ph.D., Graduate Theological Union

ROBERT W. PATCH (1988)
Associate Professor, History
B.A., University of Illinois, Urbana-Champaign;
Ph.D., Princeton University

PRASANTA K. PATTANAIK (1991)
Professor, Economics
B.A., Utkal University, Orissa, India;
M.A., Ph.D., University of Delhi, India

THOMAS H. PAYNE (1967)
Associate Professor, Computer Science and Engineering
B.S., Marquette University;
M.S., Ph.D., University of Notre Dame

IVAN B. PENKOV (1991)
Professor, Computer Science and Engineering
B.A., Utkal University, Orissa, India;
M.A., Ph.D., University of Delhi, India
MARINA PIANCA (1989)
Professor, Hispanic Studies
B.A., California State University, Long Beach;
M.A., Ph.D., University of California, Los Angeles

JOHN D. PINTO (1970)
Professor, Entomology
A.B., Humboldt State University;
Ph.D., University of Illinois

DAVID S. PIEN-BERLIN (1991)
Professor, Political Science
B.A., Colgate University;
M.A., Ph.D., University of Denver

EDWARD G. PLATZER (1971)
Professor, Biology, Nematology
B.S., M.S., University of British Columbia;
Ph.D., University of Massachusetts, Amherst

YAT SUN POON (1991)
Professor, Mathematics
B.S., Chinese University, Hong Kong;
Ph.D., Oxford University

S. JAMES PRESS (1977)
Professor, Statistics
B.A., New York University;
M.S., University of Southern California;
Ph.D., Stanford University

MARY V. PRICE (1979)
Professor, Biology
A.B., Vassar College;
Ph.D., University of Arizona

LEONID P. PRZYMUSINSKI (1991)
Professor, Computer Science and Engineering
M.S., Warsaw University;
Ph.D., Polish Academy of Sciences, Warsaw

KAREN D. PYKE (2000)
Assistant Professor, Sociology
B.A., University of Michigan;
Ph.D., University of Michigan

PAUL M. QUINTON (1979)
Professor, Biomedical Sciences
B.A., University of Texas, Austin;
Ph.D., Rice University

DALLAS L. RABENSTEIN (1985)
Professor, Chemistry
B.S., University of Washington;
Ph.D., University of Wisconsin

ZIV RAN (1986)
Professor, Mathematics
B.S., Tel Aviv University, Israel;
Ph.D., University of California, Berkeley

ROGER L. RANSOM (1968)
Professor, History
B.A., Reed College;
Ph.D., University of Washington

A.L.N. RAO (1993)
Associate Professor, Plant Pathology
B.S., Agricultural College, India;
M.S., Indian Agricultural Research Institute;
Ph.D., University of Adelaide, Australia

MALEMBATI M. RAO (1972)
Professor, Mathematics
B.A., Hindu College, Masaulpatem, India;
M.A., Presidency College, Madras, India;
M.Sc., University of Madras;
Ph.D., University of Minnesota

LISA RAPHALS (1999)
Associate Professor, Comparative Literature and Foreign Languages
B.A., Clark University;
M.A., Boston College;
Ph.D., University of Chicago

LOUIS J. RATLIFF, JR. (1963)
Professor Emeritus, Mathematics
B.A., M.S., Ph.D., University of Iowa

CHINA RAVISHANKAR (1999)
Professor, Computer Science and Engineering
M.S., Ph.D., University of Wisconsin, Madison

NORMAN RAITHCH (1962)
Professor, History
B.A., Queen’s College, New York;
M.A., Ph.D., Princeton University

ANDREWS REATH (1994)
Professor, Philosophy
B.A., Princeton University;
Ph.D., Harvard University

ERICH RECH (1995)
Assistant Professor, Philosophy
B.A., University of Tübingen, Germany;
M.A., Ph.D., University of Chicago

RICHARD A. REDAK (1990)
Associate Professor, Entomology
B.S., M.S., University of New Mexico;
Ph.D., Colorado State University

CHRISTOPHER A. REED (1998)
Professor, Chemistry
B.Sc., M.Sc., Ph.D., Auckland University, New Zealand

ELLEN REESE (2000)
Assistant Professor, Sociology
B.A., Reed College;
M.A., Ph.D., University of California, Los Angeles

BRIAN REILLY (1999)
Assistant Professor, Education
B.A., University of Florida;
M.A., Stanford University;
Ph.D., University of California, Berkeley

MICHAEL F. ROTTIG (1967)
Professor, Chemistry
B.A., Earlham College;
Ph.D., University of Illinois

CHANDRA REYNOLDS (2000)
Assistant Professor, Psychology
B.A., University of California, Irvine;
M.A., Ph.D., University of Southern California

DAVID N. REZNICK (1984)
Professor, Biology
B.A., Washington University;
Ph.D., University of Pennsylvania

PHILIP A. ROBERTS (1981)
Professor, Nematology
B.S., (Hon.), University of Leeds, England;
Ph.D., University of Birmingham, England

CHRISTOPHER A. ROBERTSON (1971)
Associate Professor, Statistics
B.A., M.A., Trinity College, Cambridge;
Ph.D., University of Exeter, England

FRANCESCA R. ROCHBERG (1994)
Professor, History
B.A., University of Pennsylvania;
Ph.D., University of Chicago

WAYMOND RODGERS (1992)
Associate Professor, Management
B.A., Michigan State University;
M.B.A., University of Detroit;
Ph.D., University of Southern California

WENDY L. ROGERS (1996)
Associate Professor, Dance
A.B., University of California, Berkeley;
A.M., Stanford University
ERIK ROLLAND (1991)
Associate Professor, Management
B.S., Ohio State University;
M.S., Norwegian Institute of Technology, Norway;
M.A., Ph.D., Ohio State University

MICHAEL L. ROOSE (1982)
Professor, Botany and Plant Sciences
B.A., Reed College;
Ph.D., University of California, Davis

SUSAN ROSE (1989)
Professor, Dance
B.F.A., M.F.A., California Institute of the Arts

LAWRENCE D. ROSENBLUM (1989)
Associate Professor, Psychology
B.A., State University of New York, Binghamton;
Ph.D., University of Connecticut

ROBERT ROSENTHAL (1999)
Professor, Psychology
B.A., Ph.D., University of California, Los Angeles

PARAMA ROY (1989)
Associate Professor, English
B.A. Lady Shri Ram College, The University of Delhi;
M.A., Ph.D., University of Rochester

CONRAD RUDOLPH (1991)
Professor, Art History
B.A., M.A., Ph.D., University of California, Los Angeles

DAVID E. RUSH (1971)
Professor, Mathematics
B.S., Southwest Missouri State University;
M.S., Western Washington State College;
Ph.D., Louisiana State University

R. ROBERT RUSSELL (1986)
Professor, Economics
B.A., University of California, Santa Barbara;
Ph.D., Harvard University

RAYMOND L. RUSSELL, III (1979)
Professor, Sociology
B.A., Stanford University;
M.A., Ph.D., Harvard University

MICHAEL K. RUST (1975)
Professor, Entomology
A.B., Hiram College;
M.A., Ph.D., University of Kansas

PETER M. SADLER (1976)
Professor, Earth Sciences
B.Sc., Ph.D., University of Bristol, England

SHARON V. SALKNER (1980)
Professor, History
B.A., M.A., Ph.D., University of California, Los Angeles

MICHELE R. SALZMAN (1995)
Professor, History
B.A., Brooklyn College of City University of New York;
M.A., Ph.D., Bryn Mawr College

JUDITH SANDHOLZ (1999)
Assistant Professor, Education
B.S., Brigham Young University;
M.S., University of Utah;
Ed.S., Ph.D., Stanford University

CLAY A. SASSAMAN (1976)
Professor, Biology
B.S., College of William and Mary;
Ph.D., Stanford University

THOMAS E. SCALON (1981)
Professor, Comparative Literature and Foreign Languages
B.A., Duquesne University;
M.A., Ph.D., Ohio State University

SIEGFRIED SCHANBERG (1987)
Professor, Management
B.S., University of Marburg, Germany;
M.S., University of Mainz, Germany;
Ph.D., Habilitation, University of Koeln, Germany

MICHAEL SCHILL (1998)
Assistant Professor, Management
B.Sc., Brigham Young University;
M.B.A., L'Institut Europeen d'Administration d'Affaires (INSEAD), France;
Ph.D., University of Washington

NEAL L. SCHELER (1979)
Professor, Biomedical Sciences
B.S., Boston College;
Ph.D., University of Massachusetts, Amherst

DANIEL SCHLENK (2000)
Professor, Environmental Sciences
B.S., University of Louisiana at Monroe;
M.S., Ph.D., Oregon State University

HARLAND H. SCHMIDT (1955)
Professor Emeritus, Chemistry
B.A., University of Minnesota;
Ph.D., University of California, Berkeley

REINHARD SCHULTZ (1999)
Professor, Mathematics
S.B., S.M., Ph.D., University of Chicago
MAURYA SIMON (1991)
Professor, Creative Writing
B.A., Pitzer College;
M.F.A., University of California, Irvine

JAMES J. SIMS (1964)
Professor, Plant Pathology
B.S., Arizona State University;
Ph.D., University of California, Los Angeles

FRANCES M. SLADEK (1992)
Associate Professor, Cell Biology & Neuroscience
B.A., Princeton University;
M.Sc., Ph.D., Yale University

GEORGE E. SLUSSER (1991)
Professor, Comparative Literature and Foreign Languages
A.B., University of California, Berkeley;
Ph.D., Harvard University

BRIAN K. SMITH (1990)
Professor, Religious Studies
B.A., Macalester College;
M.A., Ph.D., University of Chicago

GARY A. SOTO (1999)
Professor, Creative Writing
B.A., California State University, Fresno;
M.F.A., University of California, Irvine

ANDREW SPICER (1997)
Assistant Professor, Management
B.A., Yale University;
Ph.D., University of Pennsylvania

STEPHEN R. SPINDLER (1981)
Professor, Biochemistry
B.A., University of California, San Diego;
Ph.D., University of Texas, Houston

MARK S. SPRINGER (1991)
Associate Professor, Biology
B.S., California State Polytechnic University, Pomona;
M.S., Ph.D., University of California, Riverside

P. STERLING STUCKEY (1989)
Professor, History
B.A., M.A., Ph.D., Northwestern University

EUKA SLODZENBURG (1989)
Professor, Art
B.F.A., Minneapolis College of Art and Design;
M.F.A., University of California, San Diego

RICHARD C. SUTCH (1998)
Professor, Economics
B.A., University of Washington, Seattle;
Ph.D., Massachusetts Institute of Technology

H. LEE SWANSON (1991)
Professor, Education
B.A., Westminster College;
M.A., California State University, Los Angeles;
Ph.D., University of New Mexico

CHRISTOPHER Y. SWITZER (1990)
Associate Professor, Chemistry
B.S., Fort Lewis College;
Ph.D., Johns Hopkins University

PRUDENCE TALBOT (1977)
Professor, Cell Biology & Neuroscience
B.A., Wilson College;
M.A., Wellesley College;
Ph.D., University of Houston

KARL A. TAUBE (1989)
Professor, Anthropology
B.A., University of California, Berkeley;
M.A., M.Phil., Ph.D., Yale University

R.E. TAYLOR, JR. (1969)
Professor, Anthropology
B.A., Pacific Union College;
M.A., M.A., Ph.D., University of California, Los Angeles

S. NELSON THOMPSON (1972)
Professor, Entomology
B.S., M.S., Ph.D., Simon Fraser University, Canada

SCOTT R. TILLEY (1998)
Assistant Professor, Computer Science and Engineering
B.S., Concordia University;
M.Sc., Ph.D., University of Victoria

THOMAS B. TIMAR (1989)
Associate Professor, Education
B.A., M.A., Ph.D., University of California, Berkeley

BARBARA J. TINSLEY (1990)
Professor, Psychology
B.S., M.A., University of Illinois, Urbana-Champaign;
Ph.D., University of Illinois
RONALD C. TOBEY (1970)  
Professor, History  
B.A., University of New Hampshire;  
M.A., Ph.D., Cornell University  

HARRY W.K. TOM (1992)  
Professor, Physics  
A.B., Harvard; M.S., Oxford University;  
Ph.D., University of California, Berkeley  

LINDA J. TOMKO (1989)  
Associate Professor, Dance  
B.A., Miami University;  
M.A., Ph.D., University of California, Los Angeles  

CLIFFORD E. TRAFZER (1991)  
Professor, History  
B.A., M.A., Northern Arizona University;  
Ph.D., Oklahoma State University  

JULINDA A. TRAUGH (1973)  
Professor, Biochemistry  
B.S., University of California, Davis;  
Ph.D., University of California, Los Angeles  

SIMON K. TREPATHI (1997)  
Professor, Computer Science and Engineering  
M.S., Banaras Hindu University;  
M.S., University of Alberta;  
M.S., Ph.D., University of Toronto  

JOHN T. TRUMBLE (1980)  
Professor, Entomology  
B.S., University of Delaware;  
M.S., Ph.D., Virginia Polytechnic Institute and State University  

LING-WEN TSAI (2000)  
Professor, Mechanical Engineering  
B.S., National Taiwan University;  
M.S., State University of New York, Buffalo;  
Ph.D., Stanford University  

VASSILIS TSOTRAS (1997)  
Associate Professor, Computer Science  
B.S., National Technical University of Athens;  
M.Phil., M.S., Ph.D., Columbia University  

AUSTIN T. TURK (1988)  
Professor, Sociology  
B.A., University of Georgia;  
M.A., University of Kentucky;  
Ph.D., University of Wisconsin, Madison  

JONATHAN H. TURNER (1969)  
Professor, Sociology  
B.A., University of California, Santa Barbara;  
M.A., Ph.D., Cornell University  

CAROLE-ANNE TYLER (1989)  
Associate Professor, English  
B.A., Williams College;  
M.A., Ph.D., Brown University  

AMAN ULLAH (1989)  
Professor, Economics  
B.S., M.S., Lucknow University, India;  
Ph.D., Delhi University, India  

KAMBIZ VAFAP (2000)  
Professor, Mechanical Engineering  
B.S., University of Minnesota;  
M.S., Ph.D., University of California, Berkeley  

FRANK VAHID (1994)  
Associate Professor, Computer Science and Engineering  
B.S., University of Illinois, Urbana-Champaign;  
Ph.D., University of California, Irvine  

GORDON J. VANDALEN (1982)  
Professor, Physics  
B.S., M.S., Ph.D., University of California, Riverside  

HENRY J. VALX, JR. (1970)  
Professor, Environmental Sciences  
B.A., University of California, Davis;  
M.A., M.S., Ph.D., University of Michigan, Ann Arbor  

CARLOS G. VELÉZ- IBÁÑEZ (1994)  
Professor, Anthropology  
B.A., M.A., University of Arizona, Tucson;  
M.A., Ph.D. University of California, San Diego  

AKULA VENKATRAM (1993)  
Professor, Chemical and Environmental Engineering  
B.S., Indian Institute of Technology;  
M.S., Brigham Young University;  
Ph.D., Purdue University  

JOHN B. VICKERY (1966)  
Professor Emeritus, English  
B.A., University of Toronto;  
M.A., Colgate University;  
Ph.D., University of Wisconsin  

P. KIRK VISSCHER (1989)  
Associate Professor, Entomology  
A.B., Harvard University;  
M.S., Ph.D., Cornell University  

J. GILES WRAYNE (1974)  
Professor, Botany and Plant Sciences  
B.S., University of Reading, England;  
M.S., University of California, Los Angeles;  
Ph.D., University of California, Riverside  

AMEE M. WALKER (1979)  
Professor, Biomedical Sciences  
B.Sc., Ph.D., University of Liverpool, England  

GREGORY P. WALKER (1982)  
Associate Professor, Entomology  
B.A., Miami University;  
M.S., Ph.D., Ohio State University  

CATHERINE E. WALL (1998)  
Assistant Professor, Hispanic Studies  
B.A., M.A., Ph.D., University of Texas, Austin  

IRWIN M. WALL (1970)  
Professor, History  
B.A., M.A., Ph.D., Columbia University  

MARGUERITE R. WALLER (1990)  
Professor, English, Women's Studies  
B.A., Cornell University;  
M.A., Ph.D., Yale University  

LINDA L. WALLING (1984)  
Associate Professor, Botany and Plant Sciences  
B.A., Middlebury College;  
Ph.D., University of Rochester  

WILLIAM E. WALTON (1995)  
Assistant Professor, Entomology  
B.S., University of Rhode Island;  
M.S., Ph.D., University of Maryland  

GEORGIA WARNKE (1991)  
Professor, Philosophy  
B.A., Reed College;  
M.A., Ph.D., Boston University  

DAVID H. WARREN (1969)  
Professor, Psychology  
B.A., Yale University;  
Ph.D., University of Minnesota  

NICKOLAS M. WAGSTER (1979)  
Professor, Biology  
B.A., Stanford University;  
Ph.D., University of Arizona  

GARY WATSON (1999)  
Professor, Philosophy  
B.A., University of Washington, Seattle;  
Ph.D., Princeton University  

DIERRE A. WEBER (1991)  
Associate Professor, History  
B.A., M.A., Ph.D. University of California, Los Angeles  

CHARLES WETHERELL (1981)  
Associate Professor, History  
B.A., St. Lawrence University;  
Ph.D., University of New Hampshire  

HOWARD K. WETSTEIN (1989)  
Professor, Philosophy  
B.A., Yeshiva College;  
M.A., Ph.D., City University of New York
Student Howard Smith’s senior project in The Marlan and Rosemary Bourns College of Engineering involved the design of a model application to provide soundproofing in cars and rooms.
Students Ryan Canlas and Margaret Fajardo discuss creative writing with author Dorothy Allison during UCR’s annual Writers Week.

YUSHAN YAN (1998)
Assistant Professor, Chemical and Environmental Engineering
B.S., University of Science & Technology of China;
M.S., Ph.D., California Institute of Technology

ZHENBIAO YANG (1999)
Assistant Professor, Botany and Plant Sciences
B.S., South China College of Tropical Crops, China;
M.S., Iowa State University;
Ph.D., Virginia Polytechnic Institute and State University

JORY A. YARMOFF (1989)
Professor, Physics
B.S., State University of New York, Stony Brook;
Ph.D., University of California, Los Angeles

MARYLYNN V. YATES (1987)
Professor, Environmental Sciences
B.S., University of Wisconsin;
M.S., New Mexico Institute of Mining and Technology;
Ph.D., University of Arizona

YANG YE (1991)
Associate Professor, Comparative Literature and Foreign Languages
B.A., Fudan University;
M.A., Ph.D., Harvard University

FRANCISCO ZAERA (1986)
Professor, Chemistry
Licentiate, Simon Bolivar University;
Ph.D., University of California, Berkeley

G. LAWRENCE ZAHN (1970)
Associate Professor, Management
B.S., Yale University; M.B.A., Stanford University;
Ph.D., Yale University

JINGSONG ZHANG (1996)
Assistant Professor, Chemistry
B.S., University of Science & Technology of China;
Ph.D., University of California, Berkeley

CHUNSHENG ZHOU (1997)
Assistant Professor, Management
M.S., Beijing University, China;
Ph.D., Princeton University

RAPHAEL ZIDOVETZKI (1984)
Professor, Cell Biology & Neuroscience
M.Sc., Moscow State University, Lomonosov;
Ph.D., Weizmann Institute of Science

PAUL ZIEMANN (1996)
Assistant Professor, Environmental Sciences
B.S., University of Connecticut;
M.S., University of Alaska-Fairbanks;
Ph.D., Pennsylvania State University

MARLENE ZUK (1989)
Professor, Biology
B.A., University of California, Santa Barbara;
M.S., Ph.D., University of Michigan, Ann Arbor

ALLEN D. ZYCH (1973)
Professor, Physics
B.S., M.S., Case Institute of Technology;
Ph.D., Case Western Reserve University
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Director, Communications ................ Michael J. Moreno, B.S.
Director, Educational Opportunity Program ... Betty Benzor, B.A.
Director, Financial Aid ................... Sheryl Hayes, B.S.
Director, Environmental Health and Safety ... Ross Grayson, Ph.D.
Director, Federal Relations ................ Eliza Baldwin, M.S.
Director, Housing, Commons,
Child Development, and Dining Services .... Dale Bailey, M.B.A.
Director, Human Resources ................ Barbara Cooper, M.A.
Director, Institutional Planning
and Analysis ............................. Sam E. Namminga, Ph.D.
Manager, Internal Audit .................. Michael R. Jenson, M.B.A.
Manager, Labor Relations ............... Anthony Giorgio, B.S.
Manager, Materiel Management .......... King Henderson, M.B.A.
Manager, Office of Research Affairs ...... Hannah Petzenbaum, M.A.
Director, Physical Plant .................. Mike Miller
Director, Planning, Design, and Construction .... Dan Johnson, B.S.
Manager, Service Enterprises ........... Dallas Johnson, A.A.
Director, Special Services .............. Lenda Kellsbrand, B.S.
Director, Undergraduate Admissions ...... Laurel S. Nelson, B.A.
Coordinator, University/Eastside
Community Projects .................... Lucia Ortega-Rodriguez
Director, University Relations .......... Jack R. Chappell, M.A.
Coordinator, Urban and Environmental
Outreach Program ....................... Karen P. Varcoe, Ph.D.

Chief Campus Officers

Provost 1949-56 ............................ Gordon S. Watkins
Provost 1956-58; Chancellor 1958-64 .... Herman Spieth
Chancellor 1964-79 ........................ Ivan Hinderaker
Chancellor 1979-84 ........................ Tomás Rivera
Chancellor 1985-87 ........................ Theodore L. Hall
Chancellor 1987-92 ........................ Rosemary S.J. Schraer
Chancellor 1992- ............................ Raymond L. Orbach

UC Riverside Officers Emeriti

Chancellor Emeritus ...................... Ivan Hinderaker, Ph.D., LL.D.
Dean Emerita, Graduate Division ........ Anne Kernan, Ph.D.
Dean Emeritus, College of Natural
and Agricultural Sciences .......... Seymour D. Van Gundy, Ph.D.
Dean Emeritus, Graduate School
of Education .............................. Irving H. Balow, Ph.D.
Dean Emeritus, University Extension,
Riverside ................................. James R. Hartley, Ed.D.
Registrar Emeritus ........................ Robert B. Herschler, M.A.
Vice Chancellor Emeritus, Faculty
Relations and Academic Support ........ John B. Vickery, Ph.D.
APPENDIX A

Residence for Tuition Purposes

If you have not been living in California with the intent to make it your permanent home for more than one year immediately before the residence determination date for each term in which you propose to attend the university, you must pay nonresident tuition as well as all assessed fees. 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.

Law Governing Residence

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

Who is a Resident?

If you are an adult student (at least 24 years of age), you may establish residence for tuition purposes in California if you are a U.S. citizen, or a permanent resident or other immigrant, or if you are a nonimmigrant who is not precluded from establishing a domicile in the U.S. Check with the residence affairs officer in the Office of the Registrar for the latest information on qualifying nonimmigrant visas.

To establish residence you must be physically present in California for more than one year prior to the residence determination date and you must have come here with the intent to make California your home as opposed to coming to California to go to school. Physical presence in the state solely for educational purposes does not constitute the establishment of California residence, regardless of the length of your stay.

You must demonstrate your intention to make California your home by severing your residential ties with your former state of residence and by establishing those ties with California. If these steps are delayed, the one-year physical presence requirement will be extended until you have demonstrated both presence and intent for one full year.

If your parents are not residents of California, you will be required to be financially independent to qualify as a resident for tuition purposes.

Requirements for Financial Independence

You are considered “financially independent” if one or more of the following apply: (1) you are at least 24 years of age by December 31 of the calendar year for which you are requesting residence classification; (2) you are a veteran of the U.S. Armed Forces; (3) you are a ward of the court or both parents are deceased; (4) you have legal dependents other than a spouse; (5) you are married, or are a graduate or professional student, and you were not claimed as an income tax deduction by your parents or any other individual for the tax year immediately preceding the term for which you are requesting resident classification; or (6) you are a single undergraduate student and were not claimed as an income tax deduction by your parents or any other individual for the two tax years immediately preceding the term for which you are requesting resident classification and you can demonstrate self-sufficiency for those two years. (Note that financial dependence is not a factor in residence status for graduate student instructors, graduate student teaching assistants, research assistants, junior specialists, postgraduate researchers, graduate student researchers, and teaching associates who are employed 49 percent or more of full-time in the term for which classification is sought.)

Establishing Intent to Become a California Resident

Indications of your intent to make California your permanent residence can include the following: registering to vote and voting in California elections; designating California as your permanent address on all school and employment records, including military records if you are in the military service; obtaining a California driver’s license or, if you do not drive, a California identification card; obtaining California vehicle registration; paying California income taxes as a resident, including taxes on income earned outside California from the date you establish residence; establishing a California residence in which you keep your personal belongings; and paying legal professional practice in California. The absence of these indicia in other states during any period for which you claim residence can also serve as an indication of your intent. Documentary evidence is required, and all relevant indications will be considered in determining your classification. Your intent will be questioned if you return to your prior state of residence when the University is not in session.

General Rules Applying to Minors

If you are an unmarried minor (under age 18), your residence is considered to be the residence of the parent with whom you live. If you have a parent living, you cannot change your residence by your own act, by the appointment of a legal guardian, or by the relinquishment of your parent’s right of control. If you live with neither parent, your residence is that of the parent with whom you last lived. Unless you are a minor alien present in the U.S. under the terms of nonimmigrant visa that precludes you from establishing domicile in the U.S., you may establish your own residence when both your parents are deceased and a legal guardian has not been appointed. If you derive California residence from a parent, that parent must satisfy the one-year durational residence requirement.

Specific Rules Applying to Minors

1. Divorced or Separated Parents. You may be able to derive California resident status from a California resident parent if you move to California to live with that parent on or before your 18th birthday.

2. Parent of Minor Moves from California. You may be entitled to resident status if you are a minor U.S. citizen or eligible alien whose parent(s) was a resident of California who left the state within one year of the residence determination date if (a) you remained in California after your parent(s) departure, (b) you enroll in a California public postsecondary institution within one year of your parent(s) departure, and (c) once enrolled, you maintain continuous attendance at that institution. Financial independence is not required in this case.

3. Two-Year Care and Control. You may be entitled to resident status if you are a U.S. citizen or eligible alien and you have lived continuously with an adult who is not your parent for at least two years prior to the residence determination date. The adult with whom you are living must have been responsible for your care and control for the entire two-year period and must have been living in California during the one year immediately preceding the residence determination date.
Exemptions from Nonresident Tuition

1. Member of the Military. If you are a member of the U.S. Military stationed in California on active duty, unless you were assigned for educational purposes to a state-supported institution of higher education, you may be exempt from nonresident tuition until you have lived in California long enough to become a resident. You must provide the residence affairs officer with a statement from your commanding officer or personnel officer stating that your assignment to active duty in California is not for educational purposes. The letter must include the dates of your assignment to the state.

2. Spouse or Other Dependents of Military Personnel. You are exempt from payment of nonresident tuition if you are a spouse or a natural or adopted child or stepchild who is a dependent of a member of the U.S. military stationed in California on active duty. The exemption is available until you have lived in California long enough to become a resident. You must petition for a waiver of nonresident tuition each term you are eligible. If you are enrolled in a postsecondary educational institution and the member of the military is transferred on military orders to a place outside California where he or she continues to serve in the Armed Forces, or the member of the military retires from active duty immediately after having served in California on active duty, you may retain this exemption under conditions listed above.

3. Child or Spouse of a Faculty Member. To the extent of funds available, if you are an unmarried dependent child under age 21 or the spouse of a member of the University faculty who is a member of the Academic Senate, you may be eligible for a waiver of nonresident tuition. Confirmation of the faculty member's membership on the Academic Senate must be secured each term.

4. Child or Spouse of University Employee. You may be entitled to a waiver of nonresident tuition if you are an unmarried dependent child or the spouse of a full-time University employee whose assignment is outside California (e.g., Los Alamos Scientific Laboratory). Your parents' or spouse's employment status with the University must be ascertained each term.

5. Child of Deceased Public Law Enforcement or Fire Suppression Officer. You may be entitled to a waiver of nonresident tuition if you are the child of a deceased public law enforcement or fire suppression employee who was a California resident at the time of his or her death and who was killed in the course of fire suppression or law enforcement duties.

6. Dependent Child of a California Resident. If you have not been an adult resident of California for more than one year and are the natural or adopted dependent of a California resident who has been a resident for more than one year immediately before the residence determination date, you may be entitled to a waiver of nonresident tuition until you have lived in California the minimum time necessary to become a resident, so long as continuous attendance is maintained at an institution.

Temporary Absences

If you are a nonresident student who is in the process of establishing a residence for tuition purposes and you return to your former state during noninstructional periods, your 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 solely for educational purposes will not be classified as residents for tuition purposes regardless of the length of their stay.

If you are a student who has been classified as a resident for tuition purposes and you leave the state temporarily, your absence could result in the loss of your California residence. The burden will be on you (or your parents if you are a minor) to verify that you did nothing inconsistent with your claim of a continuing California residence during your absence. Steps that you (or your parents) should take to retain a California residence include:

1. Continuing to use a California permanent address in all records.
2. Continuing to satisfy California tax obligations. If you are claiming California residence, you are liable for payment of income taxes on your total income from the date you establish your residence in California, including income earned in another state or country.
3. Retaining your California voter’s registration and vote by absentee ballot.
4. Maintaining a California driver’s license and vehicle registration. If it is necessary to change your driver’s license or vehicle registration, you must change them back within the time prescribed by law.

Petition for Resident Classification

You must petition in person at the Office of the Registrar, Hinderaker Hall, for a change of classification from nonresident to resident status. All changes of status MUST be initiated before the first day of classes for the term for which you intend to be classified as a resident.

Time Limit on Providing Documentation

If additional documentation is required for residence classification but is not readily accessible, you will be given until the end of the applicable term to provide it. Nonresident tuition must be paid pending the outcome of the decision.

Incorrect Classification

If you were classified as a resident incorrectly, you are subject to a nonresident classification and to the payment of all nonresident tuition not paid. If you concealed information or furnished false information and were classified incorrectly as a result, you may be subject to University discipline. Resident students who become nonresidents must immediately notify the campus residence affairs officer.

Inquiries and Appeals

Inquiries regarding residence requirements, residence determination, and/or recognized exceptions should be directed to the Residence Affairs Officer, Office of the Registrar, Hinderaker Hall, University of California, Riverside 92521-0118. Students denied residence status by the campus residence affairs officer have the right to appeal, in writing, to the Office of the General Counsel/Legal Analyst, Residency Matters, 1111 Franklin Street, 8th Floor, Oakland, CA 94607. Such appeals must be filed within 45 days of notification of the campus residence affairs officer’s final decision. No other University personnel are authorized to supply information relative to residence requirements for tuition purposes.

You are advised that the foregoing is a summary of the law regarding residence. A copy of the regulations adopted by the Regents of the University of California is available for review in the Office of the Registrar. Note that changes may be made in the residence requirements between the publication of this statement and the relevant residence determination date.

Privacy Notice

All information requested on the Statement of Legal Residence form is required by the authority of Standing Order 110.2 (a) (d) of the Regents of the University of California for determining whether you are a legal resident for tuition purposes. Registration cannot be processed without this information. The residence affairs officer in the Office of the Registrar maintains the requested information. You have the right to inspect University records containing the residence information requested on the form.
APPENDIX B

Disclosure of Student Records

In accordance with the Federal Family Educational Rights and Privacy Act of 1974 as amended, and campus procedures that implement the University of California Policies Applying to the Disclosure of Information From Student Records, the following information is published.

Students' academic records are maintained in their academic department and appropriate college or school, or the Graduate Division; the maintenance of these records is the responsibility of the department chair or dean. Students who believe that their records contain incorrect or misleading information and who seek review of those records with a view towards altering or expunging a portion of them, should make initial inquiry and petition through the appropriate department chair or academic dean, who institutes an informal investigation and, if necessary, refers the matter for hearing.

Student records maintained by the Office of the Registrar include the official UCR academic record (transcript), academically-related information, and the Residence Classification form. The maintenance of these records is the responsibility of the Registrar. These records are available only to officials and employees of the University of California who need access to them for the performance of their official duties or to bona fide agents of the University for the collection of overdue debts to the University (but only as may be necessary to ensure collection of the overdue debt). Students who believe that their records contain incorrect or misleading information, and who seek review of those records with a view towards altering or expunging a portion of them, should make initial inquiry and petition through the Registrar, who institutes an informal investigation, and, if necessary, refers the matter for hearing. Students may inspect records, maintained by the campus, of disclosures of personally identifiable information from their student records.

Records are maintained by the Office of Undergraduate Admissions for every undergraduate student who attended UCR with the exception of students enrolled exclusively in University Extension or Summer Session. These files containing the original admission application, transcripts from institutions previously attended, and other documents related to applications for admission are held for five years after the last date of attendance or until graduation (whichever occurs earlier) at which time they are purged. Maintenance of these records is the responsibility of the Director of Undergraduate Admissions. Records are maintained by the Office of Financial Aid that are relevant to financial aid awards, work-study employment, and academic information as it pertains to satisfactory academic progress standards. These records include, but are not limited to, the Free Application for Federal Student Aid (FAPSA), Federal Income Tax Forms (1040, 1040A, 1040EZ), Financial Aid Transcripts (FAT) from schools previously attended, the Verification Form, and student employment forms. Maintenance of these records is the responsibility of the Director of Financial Aid.

Students who have records in various student service offices such as Career Services, Counseling Center, Health Service, Housing, International Services Center, Learning Center, Special Services (for disabled and veterans’ services), and Gender Education and Resource Services, should contact those offices for information. Student discipline records are kept in the Vice Chancellor, Student Services and Enrollment Office.

The University of California, Riverside considers the following to be public information with respect to individual students: address (campus, permanent, e-mail); telephone numbers; date and place of birth; major field of study; dates of attendance; degrees and honors received; the name of the most recent previous educational institution attended; participation in officially recognized University activities, including intercollegiate athletics; and, the name, weight, and height of participants on intercollegiate University athletic teams.

Students have a right to refuse to permit any or all of the above categories of personally identifiable information to be designated as public information with respect to themselves.

Students who do not want their name and local telephone number to be published in the campus telephone directory must sign and date the telephone directory restriction box that appears on their PIN Enrollment Appointment and Personal Data Form.

APPENDIX C

UCR Police Department

With a daily population of about 17,000 students, faculty, staff, and visitors, UCR is comparable to a small city. There are no walls surrounding UCR, which means that there is open access to the campus 24 hours per day. Further, there are no restrictions on visitation to any campus housing area.

On-campus housing facilities range from bungalows and apartments designed for student families to multistudent apartment complexes, and undergraduate student residence halls.

The University of California Police Department (UCPD) and residential housing personnel work closely together to support a safer and comfortable living and learning environment.

Available programs and activities include Neighborhood Watch, nightly Community
Service Officer (CSO) patrols (used to augment the round-the-clock police officer patrols), and dissemination of information to housing staff and residents.

Police officers of the University of California Police Department are armed, duly sworn peace officers of the State of California. Empowered by section 830.2(b) of the California Penal Code, UCPD officers possess the same authority and adhere to the same state-mandated standards as municipal police officers. Therefore, under California law, UCPD officers may enforce laws and make arrests anywhere in the state; however, they concentrate their efforts on the campus and its immediate environs.

UCPD officers may work in uniform or plain clothes. They provide a full range of police-related services including primary emergency responses; preventive patrols; initial investigation of observed, reported, or suspected crimes; enforcement of all applicable laws; follow-up and specialized criminal investigations; crime prevention; community liaison and relations; V.I.P./dignitary protection; special event security; traffic enforcement and accident investigation; parking enforcement; and, on occasion, campus escorts of students, faculty, or staff.

Persons arrested by UCPD officers are processed in accordance with prevailing practices in Riverside County which can include citation and release; booking into the Riverside County Jail; filing of charges with, and prosecution through, the District Attorney’s Office; and formal trial. Additionally students, faculty, and staff may be subject to University administrative sanctions.

Community Service Officers (CSOs) are student employees. They wear distinctive shirts or jackets, are not armed, and perform many specialized services for the community, including special event security, contract security patrols (e.g., campus housing areas, Physical Education facilities), campus building security checks, unlocks and lockups, and occasionally, campus escorts.

Incident Reporting
The University endorses a reporting policy that strongly encourages victims to report all criminal incidents to the police immediately, regardless of their nature. It is important that all crimes occurring on campus be reported to ensure that appropriate action can be taken.

On-campus crimes should be reported to the UCPD, and off-campus crimes need to be reported to the law enforcement agency having jurisdiction over the location of occurrence. Emergencies are best reported using available telephone 9-1-1 systems, and non-emergencies are better reported using routine channels.

The UCPD has the primary jurisdiction and responsibility for investigating crimes and providing police services to the University of California campus. The City of Riverside Police Department does not handle calls for services on the campus; they refer such calls to the UCPD.

Emergencies
Any police, fire, or medical emergency on campus can be reported using a variety of methods, including the 9-1-1 emergency reporting system, campus Emergency Call Boxes, campus emergency phones, or by walk-in reporting to the Police Department.

1. 9-1-1
   The UCPD is the Public Safety Answering Point (PSAP) for all 9-1-1 calls originating from campus telephones. UCPD coordinates all emergency responses requiring police officers, fire department personnel, paramedics, or emergency medical transportation. To utilize the 9-1-1 reporting system:
   a) If there is a 9-1-1 instruction sticker on the phone, follow the directions.
   b) On any campus phone requiring a 9 to be dialed for an off-campus line, pick up the receiver, then dial 9-9-1-1.
   c) On any campus phone requiring an 8 to be dialed for an off-campus line, pick up the receiver, then dial 8-9-1-1.
   d) On any campus pay phone, pick-up the receiver, wait for a dial tone, then dial 9-1-1.

2. Emergency Call Boxes
   Emergency Call Boxes (ECBs) are located in, or adjacent to, most campus parking lots. They are connected to the Police Department communications center by cellular telephones, and each one emits an identifier code which alerts the police dispatcher to the location of the box being activated. It is important for campus community members to learn the locations of ECBs, especially those located along frequently traveled campus routes. Maps are available from UCR Parking Services which denote the locations of ECBs. To use the system, open the box, lift the telephone receiver, and press the button.

3. Campus Emergency Phones
   Campus emergency phones are located in various campus buildings and in all campus building elevators. They are connected directly to the UCPD Communications Center.
   To use an emergency phone, simply pick up the receiver and wait for the police dispatcher to come on the line.

4. Walk-in Reporting
   The Police Department Station is located at 3500 Canyon Crest Drive, adjacent to Lot 24. Since the Department operates 24 hours per day, 365 days per year, emergencies may be reported by going directly to the Police Station.

Campus Safeguards
It is well recognized that the prevention of crime provides the best measure of protection. Therefore, the UCPD works closely with the members of the community to make UCR a safer place to work, live, and learn.

The Department provides and collaborates in presentations on topics such as personal safety, vehicle and residential security, office and equipment security, and rape prevention. Brochures and literature on crime prevention and personal safety are available through the Department’s investigations/crime prevention office. To increase awareness of campus safety at UCR, incidents of criminal activity within the campus community are publicized in many ways; distribution of the UCPD Annual Report and Crime Statistics, maintenance of an ongoing “press log”; dissemination of Community Crime Alert Bulletins (posters); the “Rap Sheet” column in the Highlander student newspaper; an Internet Web page (http://www.police.ucr.edu); “Crime Watch” columns in campus housing newsletters; regular police activity reports to campus housing administrators; and through crime prevention programs.
APPENDIX D

Campus Crime Statistics

While crimes do occur on campus, the rates of both violent crime and property crime are lower than in the surrounding community. The following data is provided in compliance with the Federal Student Right-to-Know and Campus Security Act, and similar California legislation. Additional data, along with required campus policy and program information is available. For further information, contact the UCR Chief of Police, (909) 787-4427.

Reported Incidents of Violent Crime 1995-1999

Reported Incidents of Property Crime 1995-1999

Reported Incidents of Crime

UCR 1995-1999


Violent Crime

Homicide/Manslaughter 0 0 0 0 0
Rape:
   Rape by force 0 1 2 1 1
   Attempt to commit rape 0 0 0 0 0
Robbery 3 2 3 0 7
Aggravated Assault 11 17 3 0 0
Total Violent Crime 14 20 8 1 8

Property Crime

Burglary 45 81 42 41 27
Larceny-Theft:
   Bicycle theft 33 52 44 30 39
   Other larceny-theft 269 216 158 218 228
Motor Vehicle Theft 36 42 15 18 13
Arson 1 2 2 1 0
Total Property Crime 384 393 261 308 307
Total FBI Crime Index 398 413 269 309 315

Other Offenses

Simple Assault 31 23 36 28 21
Sex Offense-Violent 0 4 2 3 1
Sex Offense-NoniViolent 3 6 2 3 0
Use of Firearms 5 4 0 2 1
Use of All Others 12 4 2 1 3
Bomb-Actual 2 0 0 0 0
Bomb-Threat 3 4 3 0 2
Disturbing the Peace 8 5 5 1 2
Trespass-Demonstrations/protests 1 1 0 0 0
Trespass-All Others 9 6 4 8 6
Vandalism 89 100 63 56 76
Forgery/N SF Checks 2 2 0 3 3
Narcotics-Felony 2 4 25 14 11
Narcotics-Misdemeanor 28 38 63 47 43
Public Drunkenness 12 19 17 18 18
Driving Under Influence-Alcohol 36 82 62 80 41
Driving Under Influence-Drugs 0 1 0 3 1
Vehicle Code-Hit and Run 20 15 11 16 14
Vehicle Code-All Others 286 242 104 4 71
Warrants Served-Traffic 3 4 0 4 *
Warrants Served-Other 57 120 79 40 *
Miscellaneous Offense Report 147 168 115 130 115
Total Other Offenses 756 852 593 547 429
Total All Incidents 1,154 1,265 862 856 744

* Classifications deleted in 1999
## ARRESTS — 1995-1999 UCR

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<td>0</td>
<td>8</td>
<td>3</td>
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<td>0</td>
<td>4</td>
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<td>Narcotics-Misdemeanor</td>
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<td>0</td>
<td>38</td>
<td>1</td>
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<td>22</td>
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<td>Driving Under Influence-Alcohol</td>
<td>36</td>
<td>2</td>
<td>82</td>
<td>10</td>
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<td>Driving Under Influence-Drugs</td>
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<tr>
<td>Vehicle Code-All Other</td>
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<td>10</td>
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<tr>
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<tr>
<td>W arrants Served-O ther</td>
<td>33</td>
<td>1</td>
<td>120</td>
<td>2</td>
<td>79</td>
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<td>Miscellaneous Offense Report</td>
<td>73</td>
<td>6</td>
<td>25</td>
<td>5</td>
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<tr>
<td><strong>TOTAL OTHER OFFENSES</strong></td>
<td><strong>460</strong></td>
<td><strong>19</strong></td>
<td><strong>559</strong></td>
<td><strong>54</strong></td>
<td><strong>393</strong></td>
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<tr>
<td><strong>TOTAL ALL ARRESTS</strong></td>
<td><strong>486</strong></td>
<td><strong>22</strong></td>
<td><strong>574</strong></td>
<td><strong>57</strong></td>
<td><strong>422</strong></td>
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* Classifications deleted in 1999
APPENDIX E

Salary and Employment Information

Average Monthly Salary Information from UCR and Representative Colleges and Universities

<table>
<thead>
<tr>
<th>Field of Study</th>
<th>Bachelor's</th>
<th>Master's</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration, Economics</td>
<td>$2,316(^1)</td>
<td>$4,310(^2)</td>
<td>$5,037(^3)</td>
</tr>
<tr>
<td>Engineering</td>
<td>$3,799(^4)</td>
<td>$4,287(^5)</td>
<td>$5,525(^6)</td>
</tr>
<tr>
<td>Humanities and Social Sciences</td>
<td>$2,316(^7)</td>
<td>$2,499(^8)</td>
<td>$3,545(^9)</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>$2,261(^10)</td>
<td>$2,796(^11)</td>
<td>$3,743(^12)</td>
</tr>
<tr>
<td>Mathematics</td>
<td>$2,862(^13)</td>
<td>$3,582(^14)</td>
<td>$4,800(^15)</td>
</tr>
</tbody>
</table>

**1999 UCR Graduates**

**Six Months After Graduation\(^1\)**

- Employed full time: 54%
- Employed part time: 8%
- Enrolled in further education: 37%
- Unemployed and seeking work: 5%
- Unemployed and not seeking work: 1%

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**APPENDIX F**

Campus Policies and Regulations Applying to Students

Student Conduct and Responsibility

Students enrolling in the University assume an obligation to conduct themselves in a manner compatible with the University's function as an educational institution. Students shall refrain from conduct which interferes with University teaching, research, administration, or the University's subsidiary responsibilities, or which endangers the health or safety of members of the University community or of visitors to the campus, and from disorderly conduct on University premises or at University-related events.

By authority of the Board of Regents, the Chancellor is entrusted with full power to act in the administration of student discipline. Rules concerning student conduct, student organizations, use of University facilities and related matters are set forth in both University policies and campus regulations, copies of which are available upon request at the Vice Chancellor, Student Services and Enrollment Office or Student Life and Leadership Office. Particular attention is called to the booklet University of California Policies Applying to Campus Activities, Organizations, and Students and to the campus regulations implementing them. The UCR Student Discipline Procedures are also available in the Vice Chancellor, Student Services and Enrollment Office.

Academic Dishonesty

Policies governing grading for academic dishonesty are covered in the Academic Senate Statement of Policy on Grades and Academic Misconduct. Academic dishonesty may also involve discipline under the student conduct procedures.

Anti-hazing Policy

Hazing or any method of initiation into a student organization or any pastime or amusement engaged in with respect to such 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 is a misdemeanor under California law (Education Code 32050) and subject to fine and imprisonment as well as campus discipline.

A full copy of the law is available in the Vice Chancellor, Student Services and Enrollment Office.

Fees

Students are expected to pay all fees and charges which they incur. Those with outstanding obligations to the University are not allowed to register, to obtain a diploma or a transcript of official record, or to participate in certain University services.

Harassment, Abusive Behavior, or Violence

Campus policy and process involving criminal sanction and campus discipline of students, faculty, or staff is outlined in the Policy Concerning Harassment, Abusive Behavior, or Violence Against a Student. It is available in the Vice Chancellor, Student Services Office.

Nondiscrimination

Civil law remedies including, but not limited to, injunctions and restraining or other orders may also be available for various discrimination issues, including sexual harassment. See the University's nondiscrimination policy on the next page of this catalog.

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Rape and Other Forms of Sexual Assault

The Protocol for Handling Incidents of Acquaintance Rape, Stranger Rape, and Other Sexual Assaults Involving Students is available at the Vice Chancellor, Student Services and Enrollment Office.

Sexual Harassment

For information on the University's sexual harassment policy, the location of information centers, and for a list of complaint resolution officers, see [Appendix G](#).

Speech and Assembly

Campus policies and procedures governing use of "free speech" on campus and conduct at "speakers and other public events" are available in the Vice Chancellor, Student Services Office and Enrollment Office.

Student Grievances

The Non-academic Student Grievance Procedures are available in the Vice Chancellor, Student Services and Enrollment Office.

Substance Abuse

UCR is committed to achieving and maintaining a campus community that fosters personal and institutional excellence and strives to provide conditions under which the work of the University can go forward freely, with the highest standards of quality and institutional integrity. In keeping with this commitment, each student should help to create a campus community that is free from the problems of substance abuse and dependency.

The Official Notice to Students Regarding Substance Abuse in University Campus Communities is issued pursuant to the requirements of Subpart B, Section 86.100 of the federal Drug-Free Schools and Communities Act of 1989. Students found to be in violation may be disciplined. Discipline can vary in severity from warning to expulsion from the University of California.

The text of the Official Notice along with Legal Sanctions Pertaining to the Use of Alcohol and Controlled Substances (a list of applicable federal and state laws) can be found in the Schedule of Classes or can be obtained from the Vice Chancellor, Student Services and Enrollment Office.

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APPENDIX G

Sexual Harassment

The University of California is committed to creating and maintaining a community in which all persons who participate in University...
programs and activities can work together in an atmosphere free of all forms of harassment, exploitation, or intimidation, including sexual. Specifically, every member of the University community should be aware that the University is strongly opposed to sexual harassment and that such behavior is prohibited by law and by University policy. It is the intention of the University to take whatever action may be needed to prevent, correct, and, if necessary, discipline behavior which violates this policy.

**Definition**

Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute sexual harassments when

1. Submission to such conduct is made either explicitly or implicitly a term or condition of instruction, employment, or participation in other University activities
2. Submission to or rejection of such conduct by an individual is used as a basis for evaluation in making academic or personnel decisions affecting an individual
3. Such conduct has the purpose or effect of unreasonably interfering with an individual’s performance or creating an intimidating, hostile, or offensive University environment

In determining whether the alleged conduct constitutes sexual harassment, consideration shall be given to the record of the incident as a whole and to the totality of the circumstances, including the context in which the alleged incidents occurred.

**Information Centers**

Confidential information and advising are available from

1. Gender Education and Resource Services, 260 Costo Hall, (909) 787-3337
2. Counseling Center, Veitch Student Center, (909) 787-5531
3. The Office of the Ombudsman, University Cottage, (909) 787-3213
4. The Office of Affirmative Action, University Cottage, (909) 787-5604

**Complaint Resolution Officers**

The complaint resolution officers for UCR are the Director of Affirmative Action and the Ombudsman. Both offices are in University Cottage. Title IX officer is Gary Wilkins, University Cottage, (909) 787-5604.

The University of California, Riverside’s Sexual Harassment Policy applies to all students, faculty, and staff. Copies are available from the Director of Affirmative Action and the campus Ombudsman.

**APPENDIX H**

**Nondiscrimination Statement**

The University of California, in compliance with Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, the Age Discrimination in Employment Act of 1967, the Age Discrimination Act of 1975, the Americans with Disabilities Act of 1990, and the Civil Rights Act of 1991, does not discriminate on the basis of race, color, national origin, religion, sex, physical or mental disability, or age in any of its policies, procedures, or practices; nor does the University, in compliance with Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974, discriminate against any employees or applicants for employment because they are special disabled veterans or veterans of the Vietnam era, or because of their medical condition (as defined in Section 12926 of the California Government Code), their ancestry, or their marital status; nor does the University discriminate on the basis of citizenship, within the limits imposed by law or University policy; nor does the University discriminate on the basis of sexual orientation. The University’s general nondiscrimination policy covers admission, access, and treatment in University programs and activities, and application for and treatment in University employment.

In conformance with University policy and pursuant to Executive Orders 11246 and 11375, Section 503 of the Rehabilitation Act of 1973, and Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974, the University of California is an affirmative action/equal opportunity employer.

**APPENDIX I**

**Graduation Rates**

The following information is provided in compliance with the Federal Student Right-To-Know Act. It reflects four-, five-, and six-year cumulative graduation rates of the 1,387 incoming first-time freshmen for Fall 1992, and does not include graduation of students who transferred to other colleges and universities. All students enrolled in a degree program are included.

- Graduated in four years: 41%
- Graduated in five years: 62%
- Graduated in six years: 66%
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<th>Location by Building Number</th>
</tr>
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<tr>
<td>33 Aberdeen-Inverness Residence Hall</td>
<td>1 Hinderaker Hall (Administration)</td>
</tr>
<tr>
<td>41 Agricultural Operations Area</td>
<td>2 Physical Education Building</td>
</tr>
<tr>
<td>27B,C Anderson Hall (AGSM)</td>
<td>2A Learning Center Buildings</td>
</tr>
<tr>
<td>12A Art Annex Building</td>
<td>3 Costa Hall</td>
</tr>
<tr>
<td>59 Alumni Center (future site)</td>
<td>4 Commons</td>
</tr>
<tr>
<td>36 Bannockburn Village and Plaza</td>
<td>5 Carrillon Tower</td>
</tr>
<tr>
<td>7 Barn — Big West Bar &amp; Grill</td>
<td>7A Humanities and Social Sciences Building</td>
</tr>
<tr>
<td>22 Batchelor Hall</td>
<td>8 University Cottage</td>
</tr>
<tr>
<td>48 Bookstore</td>
<td>9 Sproul Hall</td>
</tr>
<tr>
<td>44 Botanic Gardens</td>
<td>10 Watkins Hall</td>
</tr>
<tr>
<td>54 Bourns Hall (Engineering)</td>
<td>10A Watkins 1000 Recital Hall</td>
</tr>
<tr>
<td>20 Boyce Hall</td>
<td>11 Theatre/Humanities 400</td>
</tr>
<tr>
<td>26A Boyden Laboratories</td>
<td>11A Studio Theatre/Humanities 411</td>
</tr>
<tr>
<td>62 Canyon Crest Family Student Housing</td>
<td>12 Olmsted Hall</td>
</tr>
<tr>
<td>5 Carillon Tower</td>
<td>12A Art Annex Building</td>
</tr>
<tr>
<td>26C Insectary</td>
<td>13 Pierce Hall (Chemistry)</td>
</tr>
<tr>
<td>28 Fawcett Laboratory</td>
<td>14 Geology Building</td>
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<tr>
<td>58 Fine Arts</td>
<td>15 Tomás Rivera Library</td>
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<tr>
<td>16 Life Science Building</td>
<td>16 Life Science Building</td>
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<tr>
<td>16A Life Sciences 1500</td>
<td>16A Life Sciences 1500</td>
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<tr>
<td>31 Lothian Residence Hall</td>
<td>16B Sneath Hall</td>
</tr>
<tr>
<td>29 Mobile Trailer Facilities</td>
<td>17 Steam Plant</td>
</tr>
<tr>
<td>12 Olmsted Hall</td>
<td>18 Physics Building</td>
</tr>
<tr>
<td>53 Parking Services</td>
<td>18A Physics 2000</td>
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<tr>
<td>61 Pentland Hills Residence Hall</td>
<td>19 Weber Hall</td>
</tr>
<tr>
<td>52 Personnel Building</td>
<td>20 Boyce Hall</td>
</tr>
<tr>
<td>2 Physical Education Building</td>
<td>21 Statistics-Computer Building</td>
</tr>
<tr>
<td>18A Physics 2000</td>
<td>22 Batchelor Hall</td>
</tr>
<tr>
<td>13 Pierce Hall (Chemistry)</td>
<td>23 Entomology Annex</td>
</tr>
<tr>
<td>36 Police Facility</td>
<td>24 Entomology (under construction)</td>
</tr>
<tr>
<td>57A Riverside Campus Federal Credit Union Building</td>
<td>25 University Office Building</td>
</tr>
<tr>
<td>60 Science Library</td>
<td>25A University Laboratory Building</td>
</tr>
<tr>
<td>16B Spieth Hall</td>
<td>26 Entomology Building</td>
</tr>
<tr>
<td>9 Sproul Hall</td>
<td>26A Boyden Laboratories</td>
</tr>
<tr>
<td>21 Statistics-Computer Building</td>
<td>26B Entomology Research Museum</td>
</tr>
<tr>
<td>17 Steam Plant</td>
<td>26C Insectary</td>
</tr>
<tr>
<td>55 Student Recreation Center</td>
<td>27A Chapman Hall</td>
</tr>
<tr>
<td>11A Studio Theatre/Humanities 411</td>
<td>27B,C Anderson Hall (AGSM)</td>
</tr>
<tr>
<td>63 Stonehaven Apartments</td>
<td>28 Fawcett Laboratory</td>
</tr>
<tr>
<td>64 Surge Facilities</td>
<td>29 Mobile Trailer Facilities</td>
</tr>
<tr>
<td>39A Sweeney Art Gallery</td>
<td>30 Greenhouses</td>
</tr>
<tr>
<td>40 Telephone Building</td>
<td>31 Lothian Residence Hall</td>
</tr>
<tr>
<td>41 Agricultural Operations Area</td>
<td>32 Veitch Student Center</td>
</tr>
<tr>
<td>42 College Building North and College Building South</td>
<td>33 Aberdeen-Inverness Residence Hall</td>
</tr>
<tr>
<td>43 Environmental Health and Safety</td>
<td>34 Corporation Yard</td>
</tr>
<tr>
<td>44 Botanic Gardens</td>
<td>35 KUCR Radio</td>
</tr>
<tr>
<td>46 George E. Brown, Jr., Salinity Laboratory</td>
<td>36 Police Facility</td>
</tr>
<tr>
<td>37 Housing Administration and Cashiers</td>
<td>37 Housing Administration and Cashiers</td>
</tr>
<tr>
<td>24 Corps Yard</td>
<td>38 Bannockburn Village and Plaza</td>
</tr>
<tr>
<td>39 Watkins House</td>
<td>39 Watkins House</td>
</tr>
<tr>
<td>39A Sweeney Art Gallery</td>
<td>40 Telephone Building</td>
</tr>
<tr>
<td>41 Agricultural Operations Area</td>
<td>42 College Building North and College Building South</td>
</tr>
<tr>
<td>43 Environmental Health and Safety</td>
<td>44 Botanic Gardens</td>
</tr>
<tr>
<td>46 George E. Brown, Jr., Salinity Laboratory</td>
<td>47 Terrace Conference Rooms</td>
</tr>
<tr>
<td>47 Terrace Conference Rooms</td>
<td>48 Bookstore</td>
</tr>
<tr>
<td>55 Student Recreation Center</td>
<td>49 Highland Hall</td>
</tr>
<tr>
<td>51 Child Development Center</td>
<td>51 Child Development Center</td>
</tr>
<tr>
<td>52 Personnel Building</td>
<td>52 Personnel Building</td>
</tr>
<tr>
<td>53 Parking Services</td>
<td>53 Parking Services</td>
</tr>
<tr>
<td>54 Bourns Hall (Engineering)</td>
<td>54 Bourns Hall (Engineering)</td>
</tr>
<tr>
<td>55 Student Recreation Center</td>
<td>55 Student Recreation Center</td>
</tr>
<tr>
<td>56 UCR Extension Center</td>
<td>56 UCR Extension Center</td>
</tr>
<tr>
<td>57 University Village</td>
<td>57 University Village</td>
</tr>
<tr>
<td>57A Riverside Campus Federal Credit Union Building</td>
<td>58 Fine Arts</td>
</tr>
<tr>
<td>58 Fine Arts</td>
<td>59 Alumni Center (future site)</td>
</tr>
<tr>
<td>59 Alumni Center (future site)</td>
<td>60 Science Library</td>
</tr>
<tr>
<td>61 Pentland Hills Residence Hall</td>
<td>61 Pentland Hills Residence Hall</td>
</tr>
<tr>
<td>62 Canyon Crest Family Student Housing</td>
<td>62 Canyon Crest Family Student Housing</td>
</tr>
<tr>
<td>63 Stonehaven Apartments</td>
<td>63 Stonehaven Apartments</td>
</tr>
</tbody>
</table>
HOW TO GET TO UCR
ACADEMIC CALENDAR

FALL QUARTER 2000
Quarter begins................................................................. September 25
Instruction begins......................................................... September 28
Veterans Day holiday.................................................... November 10
Thanksgiving holiday..................................................... November 23-24
Instruction ends ............................................................. December 8
Final examinations....................................................... December 11-16
Quarter ends ................................................................. December 16
Winter recess............................................................... December 17-January 1

WINTER QUARTER 2001
Quarter begins............................................................... January 2
Instruction begins......................................................... January 4
Martin Luther King Jr. holiday........................................ January 15
Presidents’ Day holiday................................................... February 19
Instruction ends ........................................................... March 16
Final examinations......................................................... March 19-24
Quarter ends................................................................. March 24

SPRING QUARTER 2001
Quarter begins............................................................... March 28
Instruction begins......................................................... April 2
Memorial Day holiday.................................................... May 28
Instruction ends ............................................................ June 8
Final examinations......................................................... June 11-15
Quarter ends................................................................. June 15
Commencement ceremonies........................................... June 16-17

The quarterly Schedule of Classes contains detailed information concerning registration, enrollment, and related administrative deadlines.
DIRECTORY

Campus Operator.................................................................................................................. (909) 787-1012

Dial 0 from campus telephones. Campus numbers not listed below
are available in the campus directory, in the local telephone directory,
or from the campus operator.

Emergency Assistance

Off campus.......................................................................................................................... 911
Residence Halls.................................................................................................................... 8-911
Campus telephones............................................................................................................ 9-911

Admission Offices

Undergraduate Admissions— Application Evaluation......................................................... 787-3411
Graduate Admission......................................................................................................... 787-3313

Affirmative Action ............................................................................................................ 787-5604

African Student Programs ................................................................................................ 787-4576

Alumni and Constituent Relations .................................................................................... 787-4511
Asian Pacific Student Programs ....................................................................................... 787-7272
Campus Tours ................................................................................................................... 787-5045
Career Services ................................................................................................................ 787-3631
Chicano Student Programs .............................................................................................. 787-3821

Colleges and Schools

College of Humanities, Arts, and Social Sciences.............................................................. 787-3683
College of Natural and Agricultural Sciences................................................................. 787-7294 or 787-3102
Division of Biomedical Sciences ...................................................................................... 787-4333
Graduate Division ............................................................................................................ 787-3313
Graduate School of Education......................................................................................... 787-5225 or 787-5990
The A. Gary Anderson Graduate School of Management .............................................. 787-4551
The Marlan and Rosemary Bourns College of Engineering ........................................... 787-5651

Counseling Center ............................................................................................................ 787-5531

Financial Aid Office ......................................................................................................... 787-3878 or 787-3879

Gender Education and Resource Services ...................................................................... 787-3337 or 787-5000

Health Center (Campus Health Center) ........................................................................... 787-3031

Housing Information ........................................................................................................ 787-6350

Learning Center ................................................................................................................ 787-3721
Study Skills Programs, Tutorial Assistance, and Support Services

Lesbian, Gay, Bisexual, and Transgender Resource Center ............................................... 787-2267

Library Information .......................................................................................................... 787-3229 or 787-2821

Native American Student Programs ................................................................................ 787-4143

Ombudsperson ................................................................................................................ 787-3213

Parking Services .............................................................................................................. 787-4395

Office of the Registrar ...................................................................................................... 787-3401

Relations with Schools .................................................................................................... 787-4531
Information for Prospective Students

Services for Students with Disabilities (Voice and TDD) .................................................. 787-4538

Student Life and Leadership Center .............................................................................. 787-7344
Cubs, Recreation, Orientation

Student Special Services .................................................................................................. 787-3861
Veterans’ Benefits

Summer Sessions ............................................................................................................. 787-3044

Transfer and Reentry Services ......................................................................................... 787-5307