

UNIVERSITY OF CALIFORNIA, MERCED



www.ucmerced.edu

2005-2006 CATALOG



LAUNCHING THE FUTURE

ABOUT THE 2005-2006 CATALOG

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HOW TO OBTAIN THE CATALOG

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PLEASE NOTE

This catalog contains information about UC Merced. Because the UC Merced Catalog must be prepared well in advance of the year it covers, changes in some programs and courses inevitably will occur. Updates to this information are available online at http://www.ucmerced.edu. The selection of courses to be offered each semester is subject to change without notice, and some courses are not offered each year. The Schedule of Classes, available on the Web shortly before registration begins each semester, provides more current information on courses, instructors, enrollment procedures and restrictions, class hours, room assignments, and final examination schedules. Students should consult the appropriate school or campus unit for even more up-to-date information. Their contact information can be found in the contact information section of this catalog.

It is the responsibility of the student to become familiar with the announcements and regulations of the university that are printed in this catalog and other campus publications. The catalog is the document of records for undergraduate major requirements and is updated annually.

Cover photo:

University of California undergraduates helping UC Merced create a university around students: I. to r., Jonathan Webb (UCLA), Rica Azarcon (UCB), Michael Jackson (UCSB), Christine Lai (UCSB), Amanda Rodriguez (UCI), Michaell Caldwell (UCSB), Tiffany Williams (UCI). Photographer: Roger J. Wyan.

Artist rendering of Joseph E. Gallo Recreation and Wellness Center which is scheduled to open in Fall 2006.

Printed on recycled paper with soy-based inks.

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ACADEMIC CALENDAR

FALL SEMESTER 2005

Semester begins	August 29, 2005	Monday
Labor Day holiday	September 5, 2005	Monday
Instruction begins	September 6, 2005	Tuesday
Veterans Day holiday	November 11, 2005	Friday
Thanksgiving holiday	November 24-25, 2005	Thursday-Friday
Instruction ends	December 15, 2005	Thursday
Final examinations preparation	December 16, 18, 2005	Friday, Sunday
Final examinations	December 17, 19-20, 2005	Saturday, Monday-Tuesday
Semester ends	December 20, 2005	Tuesday
Winter holiday	December 26-27, 2005	Monday-Tuesday
New Year's holiday	December 30, 2005-January 2, 2006	Friday, Monday

SPRING SEMESTER 2006

Semester begins	January 10, 2006	Tuesday
Martin Luther King Jr. holiday	January 16, 2006	Monday
Instruction begins	January 17, 2006	Tuesday
Presidents' Day holiday	February 20, 2006	Monday
Spring recess	March 27-31, 2006	Monday-Friday
Cesar Chavez Day holiday	March 31, 2006	Friday
Instruction ends	May 10, 2006	Wednesday
Final examinations preparation	May 11-12 & 14, 2006	Thursday-Friday, Sunday
Final examination	May 13, 15-16, 2006	Saturday, Monday-Tuesday
Semester ends	May 16, 2006	Tuesday

SUMMER SESSIONS 2006

Memorial Day holiday	May 29, 2006	Monday
Six-week session	June 5, 2006-July 14, 2006	Monday, Friday
Eight-week session	June 5, 2006-July 28, 2006	Monday, Friday
Independence Day holiday	July 4, 2006	Tuesdav

NOTE: Please see the Office of the Registrar website for the 2006-2007 Academic Calendar.

UNDERGRADUATE DEGREES - 2005-2006

Bioengineering, B.S.

Emphasis: Nanobioengineering

Biological Sciences, B.S.

Emphases: Bioinformatics and Computational Biology

Cell Biology and Development Ecology and Evolutionary Biology Microbiology and Immunology Molecular Biology and Biochemistry

Computer Science and Engineering, B.S.

Earth Systems Science, B.S.

Emphases: Atmospheric Sciences

Ecosystem Sciences

Geochemistry and Biogeochemistry Hydrologic and Climate Sciences

Environmental Engineering, B.S.

Emphases: Air Pollution

Energy and Environmental Sustainability

Environmental Quality

Hydrology

Human Biology, B.A.

Emphases: Economics

Psychology and Cognitive Sciences

Management, B.A.

Social and Cognitive Sciences, B.A.

Emphases: Economics

Psychology Public Policy

World Cultures and History, B.A.

Emphases: History Literature

NEW MAJORS AVAILABLE IN FALL 2006 (freshmen only)

- Chemical Sciences, B.S.
- Mathematical Sciences, B.S.
- Materials Science and Engineering, B.S.
- Mechanical Engineering, B.S.
- Physics, B.S.

PLANNED ENGINEERING MAJORS

- Chemical Engineering, B.S.
- Civil Engineering, B.S.
- Electrical Engineering, B.S.
- Engineering Economics and Management, B.S

PLANNED NATURAL SCIENCES MAJORS

- Biochemistry, B.S.
- Ecology and Evolutionary Biology, B.S.

PLANNED SOCIAL SCIENCES, HUMANITIES & ARTS MAJORS

- Anthropology, B.A. & B.S.
- History of Art, B.A.
- Comparative Ethnic and Cultural Studies, B.A.
- Creative Writing, B.A.
- Economics, B.A.
- History, B.A.
- Literature and Cultural Studies, B.A.
- Literature and Languages, B.A.
- Performance Studies, B.A.
- Political Science, B.A.
- Psychology, B.A, B.S.
- Public Policy, B.A.
- Sociology, B.A.
- Spanish Language and Cultures, B.A.

GRADUATE DEGREES - 2005-2006

Individual Graduate Program M.A., M.S., Ph.D.

Graduate Group Emphases include:

Environmental Systems

Atomic and Molecular Science and Engineering

Quantitative and Systems Biology Social and Cognitive Sciences

World Cultures

Additional Planned Individual Graduate Programs

Graduate Group emphases include:

Bioengineering

Chemical Engineering

Chemical Sciences

Civil Engineering

Computer and Information Systems

Critical Studies

Economics

Electrical Engineering

Engineering Economics and Management

Environmental Systems

History of Art

Human Biology

Materials Science Engineering

Mathematical Sciences

Mechanical Engineering

Physics

Public Policy

Security Studies

World Cultures Studies

UC MERCED CONTACT DIRECTORY

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E-mail: admissions@ucmerced.edu http://admissions.ucmerced.edu

ADMISSIONS-GRADUATE DIVISION

(209) 724-2998

Email: graddiv@ucmerced.edu http://graduatedivision@ucmerced.edu

CAREER SERVICES

(209) 724-2991

E-mail: careers@ucmerced.edu

CAMPUS TOURS

toll free (866) 270-7301

DISABILITY SERVICES

E-mail: disabilityservices@ucmerced.edu

FINANCIAL AID AND SCHOLARSHIPS

(209) 724-4384

E-mail: finaid@ucmerced.edu http://students.ucmerced.edu

HEALTH SERVICES

(209) 724-2990

E-mail: health@ucmerced.edu http://student.ucmerced.edu

HOUSING AND STUDENT LIFE

(209) 724-2989

E-mail: housing@ucmerced.edu E-mail: studentlife@ucmerced.edu http://students.ucmerced.edu

LIBRARY

(209) 724-4443

E-mail: library@ucmerced.edu http://www.ucmerced.edu/lib/

REGISTRAR

(209) 724-2960

E-mail: registrar@ucmerced.edu http://registrar.ucmerced.edu

OFFICE OF RESEARCH

(209) 724-4429

http://www.ucmerced.edu/faculty/research.asp

SCHOOL OF ENGINEERING

(209) 724-4411

E-mail: engineering@ucmerced.edu http://engineering.ucmerced.edu

SCHOOL OF NATURAL SCIENCES

(209) 724-4309

E-mail: naturalsciences@ucmerced.edu http://naturalsciences.ucmerced.edu

SCHOOL OF SOCIAL SCIENCES, HUMANITIES AND ARTS

(209) 724-4335

E-mail: ssha@ucmerced.edu http://ssha.ucmerced.edu

STUDENT ADVISING AND LEARNING CENTER

(209) 724-2993

E-mail: learning@ucmerced.edu

VICE CHANCELLOR FOR STUDENT AFFAIRS

(209) 724-4482

E-mail: studentaffairs@ucmerced.edu http://studentaffairs.ucmerced.edu

SUMMER SESSIONS

(209) 381-7878

E-mail: summersession@ucmerced.edu

UC MERCED CENTERS

Bakersfield

2000 K Street, Suite 300 Bakersfield, CA 93301 (661) 861-7955

Fresno

550 East Shaw Avenue Fresno, CA 93710 (559) 241-7400

Merced Tri-College Center

3600 M Street Merced, CA 95348 (209) 381-6545 A ttending a university opens a range of unexplored vistas and invites you to engage in a discovery process, examining each new opportunity in an open, welcoming and stimulating environment.

Intellectually, the college years promise enormous growth — a growth which then provides a baseline of intellectual inquiry for the rest of your life. Individual classes, an outstanding faculty, activities on and off campus, and study sessions — conducted in an environment that promotes unfettered inquiry — provoke a new awareness of the world and your place in that world.

Socially, you will encounter individuals from all over the world, each of whom brings a unique perspective to the campus. Years after you graduate, you will remember discussions with your classmates that changed your perspective, modified your values or altered a previously held position.

Personally, you will learn a great deal about yourself during the college years. You will see your strengths and weaknesses more clearly, and will be able to pinpoint your values, your preferences for careers and the qualities you appreciate in a friend. When combined with the varied intellectual experiences at a university campus, such exploration fosters personal awareness and integrity.

At UC Merced, we are committed to developing the potential of every student, prompting your leadership, encouraging your intellectual advancement, providing context and depth to your ideas, and helping you chart a life course that is comfortable but challenging. We promise to prod your creativity and introduce the global society that will be the backdrop for your career. In the process, you will encounter the research that leads to breakthroughs in science and artistic achievement, gives birth to new industries, and improves our quality and understanding of the social milieu.



At UC Merced, you will benefit from the quality of a UC education in the supportive setting of a small campus with unprecedented, personalized access to world-renowned scholars.

It is with great pride and anticipation that I invite you to embark on an exceptional educational journey at UC Merced.

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Carol Tomlinson-Keasey

Chancellor

UC MERCED INVITES YOU TO HELP OUR CAMPUS GROW

The University of California, Merced offers students the benefits of a major research university – the first to be built in the 21st century – with the personalized attention of an intimate campus setting. Opening in fall 2005 as the 10th and newest University of California campus, UC Merced is launching the future through our commitment to excellence in teaching, research and public service.

"Innovative" and "hands-on" are central themes in the approach to learning at UC Merced, where students are invited to explore emerging areas of knowledge. Undergraduate and graduate students have unparalleled access to UC Merced's distinguished faculty and state-of-the-art facilities. Working alongside these leading scholars, students can participate in groundbreaking research that crosses and links a wide array of disciplines. Signature research institutes created at UC Merced to conduct region- and statewide research with national and international import include the Sierra Nevada Research Institute and the World Cultures Institute. Campus partnerships with such organizations as the National Park Service and Lawrence Livermore National Laboratory offer additional intellectual and facilities resources, and expand opportunities for research on the cutting edge.

THE CAMPUS

UC Merced's three initial schools — the School of Engineering, School of Natural Sciences, and School of Social Sciences, Humanities and Arts — will offer both undergraduate and graduate degree programs, and emphasize links between disciplines. State-of-the-art library resources and laboratories will further enrich your educational experience.



This aerial view of the UC Merced campus showcases the construction progess.

Adjacent to Lake Yosemite Park and just outside the city of Merced, UC Merced is continuing to develop in its convenient location at the center of California. Nestled between the Sierra Nevada range to the east and the Coastal Range to the west, the 910-acre campus also is situated within a two-hour drive from San Francisco, the Pacific Ocean and Sacramento; less than two hours from Yosemite National Park and other Sierra Nevada destinations; and an hour from Fresno. Even closer to campus, the surrounding communities in Merced, Stanislaus, and Mariposa Counties also offer a unique selection of cultural, entertainment and recreational options for students to experience.



The world-renowned natural splendor of Yosemite National Park is less than two hours from Merced.

STUDENT LIFE

Back on campus, students who join UC Merced's pioneer classes will have a once-in-a-lifetime chance to assist in crafting the student life experience for the UC Merced students who will follow. You are invited to help shape campus traditions, create student organizations and activities, and offer your ideas on student services, planning priorities and university philosophy.

As a student at UC Merced, you can gain valuable skills through internships and service learning, expand your cultural awareness and understanding, develop your leadership potential and make lifelong friends through involvement in a variety of student programs. Student government, intercultural and residential programs, intramural sports, university events and a variety of clubs and organizations will be among your choices. Students also will have access to a wide array of support services as well as academic, social, recreational and wellness activities.

ACADEMIC BUILDINGS

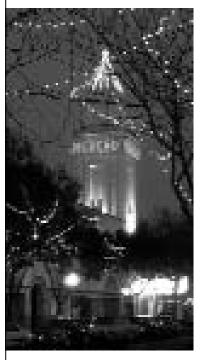
The first phase of campus development, spanning approximately 100 acres, includes three academic buildings, in addition to housing and dining complexes. At the heart of the campus, featuring a library collection that blends books and bytes, the Leo and Dottie Kolligian Library will be home to campus student services and administrative offices. It also will be a welcoming meeting place for individual study, small group work and encounters with your friends. The majority of your classrooms, lecture halls and computer labs will be located in the Classroom Building. Featuring the 360-seat Lakireddy Auditorium and multi-media and studio laboratory spaces, other building amenities will include faculty and graduate student offices. The three- story Science and Engineering Building will incorporate teaching into both wet and dry research laboratories.



University of California undergraduates helping UC Merced create a university around students—I. to r., Jonathan Webb (UCLA), Rica Azarcon (UCB), Michelle Caldwell (UCSB), Tiffany Williams (UCI), Michael Jackson (UCSB), Amanda Rodriguez (UCI), Christine Lai (UCSB)

LIVING ON CAMPUS

UC Merced looks forward to students living on campus within the safe, comfortable environment of the Valley Terraces. Undergraduate and graduate students will make their homeaway-from-home in these apartment-style suites. Serving up a range of healthy and satisfying cuisine for breakfast, lunch and dinner, the Valley Dining Commons will cater to on-campus and commuter students, faculty and staff. Visitors and members of the campus community seeking a quick meal on the run, a light snack or a cup of coffee will find what they're looking for as well. By Fall 2006, the Joseph Edward Gallo Recreation and Wellness Center will open its doors to offer traditional health services, recreational activities from aerobics classes to whitewater rafting, and wellness activities such as student peer health counseling, nutrition programs and more.



LIVING IN MERCED

In the neighboring city of Merced, students interested in living off campus will find affordable housing options and an excellent quality of life. Currently home to almost 70,000 people, the city retains the charm of a small town and boasts an average commute time of only 15 minutes.

Many educational, cultural and co-curricular activities will connect students with Merced and the surrounding region, and students are encouraged to experience the warmth of UC Merced's host community and discover its treasures. Wandering through the pedestrianfriendly downtown is a good place to start. Brickpaved walking areas, alleys decorated with murals and Italian trellises, an award-winning multicultural arts center, a community playhouse and several historically significant buildings are among the features. Merced also is home to a number of shops, restaurants and major retail stores, with additional choices available in the nearby cities of Modesto and Fresno.

This historic art deco-style movie theatre is part of downtown Merced's lively arts scene.

UC MERCED OPENING

UC Merced will open for the 2005-06 year with about 1,000 students. UC Merced seeks and welcomes students, faculty and staff of diverse ethnic and cultural backgrounds to enrich the academic, learning and social environment. The campus is expected to grow rapidly, with an addition of about 800 students in 2006 and every year thereafter. Full development of the campus is anticipated within about three decades, or around the year 2035, when UC Merced will serve an estimated 25,000 students.

UNIQUE EDUCATIONAL EXPERIENCE

To better meet the needs of students from the region, the state and the nation, a network is being created to extend outstanding educational opportunities far beyond the UC Merced campus. As part of this educational network, the campus is establishing interconnected centers to serve the San Joaquin Valley and southern Sierra Nevada with a broad spectrum of programs and services. UC Merced centers in Fresno and Bakersfield and the Tri-College Center in Merced already have offered numerous UC credit courses, professional development opportunities, student outreach activities and many other programs. Other unique off-campus locations, such as the Sierra Nevada Research Institute's Yosemite Field Station in Wawona, will expand the educational experience at UC Merced.

We invite you to visit the UC Merced campus and the Merced community to get a feel for the home of the 10th University of California campus. UC Merced's guided tours consist of an admission presentation as well as a walking tour of the campus. To make a reservation, please call the Office of Admissions/Relations with Schools & Colleges toll free in California at (866) 270-7301.

FOR INFORMATIONAL UPDATES ON UC MERCED, PLEASE VISIT US ONLINE AT WWW.UCMERCED.EDU.

SERVING THE SAN JOAQUIN VAL-LEY THROUGH THE 10TH UNIVER-SITY OF CALIFORNIA CAMPUS

UC Merced's history dates back to 1988, when the University of California Board of Regents first authorized planning for at least one additional campus based on projections of long-range enrollment demand. The Regents targeted the San Joaquin Valley as the region where the 10th University of California campus should be located. As one of the fastest-growing regions in the state, the Valley population was one of the most distant from the nine existing UC campuses. The Regents wanted to encourage more Valley students to attend the University and to extend the University's role in contributing to the region. Following an initial review of more than 85 sites in the region, 20 were advanced for further study. Subsequently, eight were forwarded for additional consideration, and three sites were chosen to undergo final analysis and a full environmental impact report. As a result of this complex process, in May 1995 the Board of Regents selected the site in eastern Merced County owned by the Virginia Smith Educational Trust.

Locating UC Merced in the San Joaquin Valley has given the campus access to a rich natural laboratory for scientific and cultural research. UC Merced's proximity to the Sierra Nevada has also led to creation of a special relationship for education and research with three crown jewels of the U.S. National Park Service: Kings Canyon, Sequoia and Yosemite National Parks.

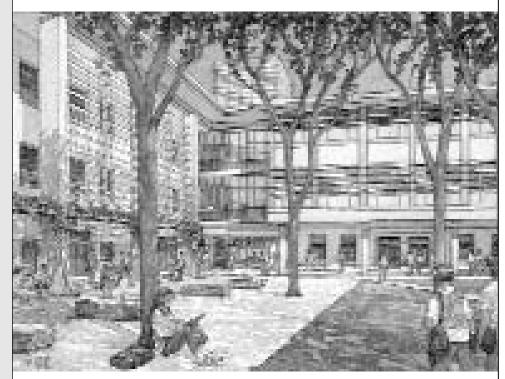


Natural Sciences faculty and staff look forward to greeting UC Merced students: top row, I. to r.: Arnold Kim, David Kelley, Keith Alley, Peggy O'Day, Maria Pallavicini, David Ojcius, Anne Kelley, Matt Meyer, James Ortez; bottom row, I. to r.: Mike Colvin, Jinah Choi, Sam Traina, Kevin Mitchell, Henry Forman, Rudy Ortiz, Miriam Barlow, Juana Dumagan.

FIAT LUX. LET THERE BE LIGHT

The University of California, Merced, is the tenth campus of the University of California, one of the largest and most highly acclaimed institutions of higher learning in the world.

Established in 1868, fewer than 20 years after California became a state, the University of California opened with 10 faculty members offering classes to 40 students the following year in Oakland. By 1873, the first academic buildings were completed on the UC Berkeley campus and the University moved to its new home. Today, the University of California serves more than 208,000 students and includes approximately 120,000 faculty and staff members. Encompassing 10 campuses, five medical centers, four law schools and a Statewide Division of Agriculture and Natural Resources, the University also manages three national laboratories for the U.S. Department of Energy. The University has awarded more than 1.5 million degrees and has more than 1.2 million living alumni.



The Science and Engineering Building will be home to the School of Natural Sciences and School of Engineering.

UC FACULTY

A leading center for innovation for more than a century, the University of California has responded to the needs of California through research, education and public service, and has helped to transform the world. University of California faculty members and researchers are pioneers in fields as diverse as agriculture, biological sciences, engineering, the environment, the arts, economics, medicine and technology, and 45 have garnered Nobel Prizes for their pioneering discoveries and advances of knowledge. Among the University's current faculty are more members of the National Academy of Sciences than at any other university in the United States.

A TRADITION OF ACADEMIC EXCELLENCE



Summer contemporary biology students Shannon Rogina and Brian Carter flank Natural Sciences Dean Maria Pallavicini.

UNIVERSITY OF CALIFORNIA: AN ECONOMIC FORCE IN CALIFORNIA

The University also fuels the state and national economies through the creation of thousands of California jobs and billions of dollars in revenues, countless discoveries that improve our quality of life, and research to support innovation in fields critical to the future of our country. Technology developed by the University powers many of the state's top and emerging industries, and University of California faculty and alumni have founded or led such major companies as Chiron, Genentech, Intel Corp., Apple Computer, Inc. and Gap, Inc.

A driving force in the daily life of Californians, the University is a critical source of civic leaders, social service programs and providers, and teachers at all levels of education.

RESEARCH AND EDUCATION NETWORK

Teaching and research are strengthened within the University through an extensive network of laboratories, museums and galleries, UC Extension centers, and research and field stations, which provide valuable public service to the communities of California and the nation. The University of California further extends its resources to the public through its performing arts centers, athletic facilities and botanical gardens. With collections totaling more than 32 million volumes, the University's libraries are yet another valuable public asset and are surpassed in size on the North American continent only by the Library of Congress collection.

UC ACADEMIC PREPARATION INITIATIVES TO K-12 AND COMMUNITY COLLEGE STUDENTS

Beyond its tripartite mission of teaching, research and public service, the University is committed to expanding the educational horizons of California's students, and is engaged in a growing number of initiatives to bolster achievement in the state's schools and better prepare students for college. UC Merced's academic preparation efforts connect with K-12 students through mentoring, tutoring, college advising and other academic programs, while community college students benefit from services that help them prepare for transfer to the University. The University of California's school partnerships offer curriculum development, direct instruction and community engagement, sophisticated data analysis of required student tests, along with additional assistance for many of California's lowest-performing schools. For teachers

and administrators, the University of California provides professional development opportunities designed to improve skills and effectiveness. Overall, the University of California's K-14 academic preparation initiatives directly affect hundreds of thousands of students and educators each year.

GOVERNANCE OF THE UNIVERSITY OF CALIFORNIA

The University of California system is governed by the 26-member Board of Regents, including 18 general members appointed by the Governor. Charged with setting general policy and making budgetary decisions for the University, the Regents also appoint the UC President, the 10 campus chancellors, and other top administrators for individual campuses and systemwide divisions. Authority for

FOR COMPLETE INFORMATION ABOUT THE UNIVERSITY OF CALIFORNIA SYSTEM, PLEASE VISIT WWW.UNIVERSITYOFCALIFORNIA.EDU



A group of San Joaquin Valley high school students tour the UC Merced campus site.

University-wide academic matters is delegated to the Academic Senate, which is composed of faculty members and administrative officers from throughout the University of California system. For each campus, a division of the University of California Academic Senate guides academic policy. Students also have the opportunity to participate in policy-making at both the campus-wide and system-wide levels.

UC MERCED'S ENVIRONMENTAL STEWARDSHIP



Wildflowers spring into bloom after winter rains.

UC Merced is using the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) system for all major campus development and construction. The LEED™ system provides a national standard for what constitutes a "green building." Using these stewardship elements in campus development will have the following environmental, economic, health, and community benefits:

RECYCLING – Construction practices recycle more than 75 percent of the job site waste, limit the distance that materials are transport-

ed to the site and incorporate recycled content materials and sustainably harvested wood products.

INDOORS – The indoor environment will provide good ventilation, incorporate day lighting and views, and use low-emitting paints, carpets and sealants.

ENERGY EFFICIENCY – Energy-use reduction techniques will create buildings that are far more energy efficient than code requirements.

WATER CONSERVATION – Building and landscape designs will reduce water use.

AIR QUALITY – Campus layout and construction will emphasize pedestrian traffic and non-polluting circulation methods for campus traffic as well as campus-community traffic.

LEARNING FROM THE PHYSICAL CAMPUS – The buildings will become ongoing teaching tools for the campus and community.

UC MERCED'S ENVIRONMENTAL STEWARDSHIP: LANDSCAPE PRESERVATION

Thanks to support from the State of California, the Virginia Smith Trust, and groups such as the David and Lucile Packard Foundation and The Nature Conservancy, the creation of the new UC Merced campus will help protect an important part of California's natural wetland and rangeland heritage. The Packard Foundation's historic gift to UC Merced preserves more than 5,000 acres of vernal pool habitat next to the new campus. Funding from the State of California has supported conservation easements, allowing continued grazing and preservation of thousands of acres of additional seasonal wetland habitat in eastern Merced County. As Chancellor Carol Tomlinson-Keasey observes, "The creation of UC Merced provides an unparalleled opportunity for environmental preservation. Vernal pool habitat in eastern Merced County has been disappear-

ing for decades. The preservation efforts undertaken as part of the creation of our campus will permanently protect thousands of acres of this sensitive habitat."



The Sierra Nevada provides a majestic backdrop for the water tower at Lake Yosemite.

UC MERCED

The University of California, Merced is committed to serving the people of the San Joaquin Valley, California, the nation and the world through excellence in education, research and public service. We strive to provide educational opportunities for all.

Our founding principles of community guide both the individual and collective behaviors of students, faculty and staff. The university expects that all of its members will emulate these fundamental principles as individuals and as a community.

We celebrate the spirit of academic excellence and strive to promote our University and its strengths through our daily interactions with students, staff, faculty and the community at large.

We maintain a working and learning environment based on integrity, fairness, cooperation, professionalism and respect.

We are a community comprised of individuals with multiple cultures, lifestyles and beliefs. We celebrate this diversity for the breadth of ideas and perspectives it brings.

We value the creativity of our students, staff and faculty, and acknowledge both their individual and collaborative achievements.

We encourage health and wellness and strive to develop a sense of environmental responsibility and stewardship among all the members of our community.

We are committed to achieving tolerance in our community. All persons – faculty, staff and students – regardless of background or lifestyle should participate and work together in a collegial atmosphere that we strive to make free of any and all acts of discrimination or harassment.

We respect, support and value the civil and respectful expression of individual beliefs and opinions.

Approved: January 2003

Note: These are the Founding Principles of Community of the University of California, Merced. In the years ahead, they will undoubtedly be reviewed and modified by future UC Merced faculty, students and staff.

For those who wish to review Academic and Staff Personnel Policies regarding nondiscrimination, please refer to www.atyourservice.ucop.edu. For further information, please contact the Director of Human Resources/Affirmative Action Officer at ucmercedjobs@ucmerced.edu.

UNIVERSITY OF CALIFORNIA MISSION STATEMENT

The distinctive mission of the University is to serve society as a center of higher learning, providing long-term societal benefits through transmitting advanced knowledge, discovering new knowledge, and functioning as an active working repository of organized knowledge. That obligation, more specifically, includes undergraduate education, graduate and professional

education, research, and other kinds of public service, which are shaped and bounded by the central pervasive mission of discovering and advancing knowledge.

> — cited in the University of California Academic Plan, 1974-1978



Prospective students and their families learn about campus plans at Bobcat Day.

OVERVIEW OF UNDERGRADUATE & GRADUATE STUDY

COLLEGE ONE

College One is responsible for overseeing the general education experience at UC Merced, including the required Core Course Sequence and the Freshman Seminar Program. College One will provide a network to connect students with advising and coursework that meets the UC Merced faculty principles for a well-rounded education.

SCHOOL OF ENGINEERING

Engineering combines scientific understanding with technical innovation to build things that determine our quality of life: new products and services, new technologies and methodologies, and new technological processes and industries.

Engineering education at UC Merced will provide students with the knowledge and know-how to solve societal problems, and to become the technical leaders of tomorrow. The School of Engineering will offer three initial undergraduate majors:

Computer Science and Engineering,
Environmental Engineering and
Bioengineering.

SCHOOL OF NATURAL SCIENCES

The School of Natural Sciences encompasses fields of study that are devoted to understanding our physical and natural world: mathematics, biology, physics, chemistry and the earth sciences.

Advances in these fields promise solutions to many of humankind's most pressing problems, from fighting new diseases to creating sustainable energy sources.

Students will gain a deep understanding of physical and biological processes.

Natural Sciences will offer three initial undergraduate majors: Biological Sciences, Earth Systems Science and Human Biology.





L. to r.: Dean of Engineering Jeff Wright, Dean of Natural Sciences Maria Pallavicini and Dean of Social Sciences, Humanities and Arts Kenji Hakuta.

SCHOOL OF SOCIAL SCIENCES, HUMANITIES AND ARTS

The educational mission of the School of Social Sciences, Humanities and Arts is to create a rich learning environment for looking at human nature through the lenses of the many disciplines represented within the School as well as the disciplinary intersections where the interesting questions lie. Social Sciences, Humanities and Arts will offer three initial undergraduate majors: Management, Social and Cognitive Sciences, and World Cultures and History.

GRADUATE EDUCATION AND RESEARCH

The UC Merced Division of Graduate Studies oversees master's and doctoral degree education. Society's most intractable problems are broad based and multifaceted. Viable solutions to these problems require a scope of multidisciplinary approaches that can benefit the people of California and the world beyond. UC Merced is committed to offering graduate students an opportunity to work on many of society's most pressing and important problems. UC Merced will offer an individually tailored graduate program with emphases in six areas. These include Quantitative and Systems Biology; Molecular Science and Engineering; Environmental Systems; Social and Cognitive Sciences; World Cultures; and Computer and Information Science. Each of these is highly interdisciplinary in approach and designed to facilitate interactions between faculty and students from a broad scope of traditional academic disciplines.

Research at UC Merced is integral to the educational experience. As apprentice scholars, graduate students join faculty in the work of discovery of new knowledge. Faculty research enriches undergraduate education through the continual updating of courses and curriculum, and special opportunities such as freshman seminar and undergraduate research programs. Interdisciplinary faculty research is fostered through research organizations such as the Sierra Nevada Research Institute and World Cultures Institute.

UC Merced Student Affairs Fellow Tiffany Williams.

PROFESSIONAL STUDIES

UC Merced's Division of Professional Studies was established in 1999 to increase professional development opportunities for residents throughout California's San Joaquin Valley. The ultimate goal of the Division of Professional Studies is to help build stronger leadership-management teams and a more highly trained workforce in the San Joaquin Valley. In an effort to equip professionals with transferable knowledge and skills for personal, pro-



Small business owners and other professionals can find numerous resources at UC Merced.

fessional and organizational growth, the division offers seminars, conferences, certificate programs, community classes, customized training courses and traditional continuing education courses in Merced, Fresno, Modesto and Bakersfield as well as other locations throughout the region. The Division of Professional Studies can design, develop and deliver programs that specially meet its clients' needs. On-site courses are high quality and competitively priced. They are customized, and tailored for your organization.

The high standards set by UC Merced's Division of Professional Studies attract expert instructors who are leaders in their fields and motivated participants who bring a wide range of experience to the classroom. Additionally, division classes provide excellent networking opportunities.

Undergraduate students may wish to enroll in such Division of Professional Studies career development classes as the Business Management Certificate Program or the Leadership Development Program. For more information, please visit our website at http://www.ucmerced.edu/professional_dev/ or call (559) 241-7416.

THE UC MERCED LIBRARY

Not the way research libraries are... the way research libraries will be.

The University of California, Merced library is both a physical building – the Leo and Dottie Kolligian Library - and an information



UC Merced's library will offer wireless connectivity, a coffee house, great views and comfortable spaces for study.

nexus. As a research library for the 21st century, it is a physical place on campus as well as a digital presence on student and faculty computers.

The Kolligian Library houses a concentrated, highly dynamic collection of information resources and serves as a center for study, collaboration and research. The collections and services support undergraduate and graduate instructional programs as well as advanced research. Library resources and services are available in the building and from computers connected to the campus network and to the Internet. Some library resources are in physical packages that sit on the shelves, including books, paper archives, sound recordings, photographs and much more. Others are in digital packages, such as online journal articles, data sets and geographic information systems

In addition to library services and collections, the Kolligian Library houses Student Affairs and campus administrative offices.

The main entrance to the building opens onto the Ed and Jeanne Kashian Floor, an open-air breezeway during fair weather and a lively focal point for social, educational and research activities on campus. The entranceway reading room has an adjacent coffee house and bookstore. Quieter spaces and collaborative workrooms are found throughout the building. Wireless and hardwired computer network access is available in all library spaces. The magnificent McFadden/Willis reading room on the fourth floor is open to all for study and quiet reflection.

As an information nexus, UC Merced's library provides instant, around-the-clock access to the resources of the California Digital Library, an unequaled collection of more than 130,000 online books, 8,000 online scholarly journals, 4,500 online statistical files, 250 reference databases and one of the world's largest online collections of historical art images more than 300,000 digital images representing works in architecture and the visual arts. With collections totaling 32 million volumes, the libraries of the University of California system are surpassed in size on the American continent only by the Library of Congress collection.

Using the UC MELVYL catalog, members of the UC Merced community can request rapid delivery of books and articles from any UC system library. The UC Merced library is actively involved in cre-



Zen monk in a tree by Soga, Shôhaku, 1730-1781, from the Ruth and Sherman Lee Institute for Japanese Art Collection.

ating digital access to research information and fine art as well, placing particular emphasis on the digitization of specialized materials that are of importance to the Sierra Nevada and San Joaquin Valley regions. For further information, contact us at library@ucmerced.edu or online: http://www.ucmerced.edu/library.

INFORMATION TECHNOLOGY

The use of computers and networks has become pervasive in higher education. However, because information technology has evolved over a long period of time, computer applications and network use are not always straightforward or easy. UC Merced is committed to deploying the best of current and emerging technologies and practices to help students make maximum use of information technology for academic purposes, administrative transactions and other activities.

From applying to UC Merced and tracking the application process to registering for courses and ultimately seeing grades, students will be able to use the Internet. For courses in which they are enrolled, collaborative learning software will allow students to see syllabi, course materials, library resources, assignments, grade books and course calendars; submit assign-



History Professor Ruth Mostern shows the animated maps she has helped create for the Electronic Cultural Arts initiative.

ments; and chat or send e-mail to other students and faculty in the course. Additionally, many courses, including those in the social sciences and humanities, are being designed to use computers in the classroom and/or will have homework assignments using specialized software in computer labs. The campus is planned to be laptop friendly, with wireless access planned in common and outdoor areas, as well as in classrooms. Inside the library, wireless access will be available in the stacks, with electrical outlets in carrels and other work areas.

Students living on campus will have 10/100 MB Ethernet connectivity to

the campus network, and secure access to the campus network will be available for those living off campus. All students will have UC Merced e-mail accounts and access to the Internet through CalREN, the California research network. A customizable portal, myUCMerced, will provide a single location from which to access all applications and information, including e-mail, course software, registration materials and information, and much more.

Because of the pervasive use of computer technology at UC Merced, it is strongly advised that students have their own personal computers, which should be capable of running typical Web and word processing applications. Students may find that their specific School has additional recommendations or requirements. Check the UC Merced website in the summer of 2005 for more specific information.

STUDENT LIFE

The University of California, Merced is committed to providing its students with the best education possible. Students—their education and development—lie at the center of all planning at UC Merced. Our goal is to be a student-centered research university with learning taking place both in and outside the classroom. Our student life programs have been designed to support student success and to create a vibrant community where students from all backgrounds can excel as they live and learn together. The finest faculty and staff, excellent facilities and co-curricular activities all contribute to the overall learning and development experience at UC Merced.

ARTS AND ENTERTAINMENT

UC Merced is part of a vibrant community in the San Joaquin Valley and is located close to the city of Merced. The city has a population of almost 70,000 and offers restaurants, parks, a weekly farmers market and an active multicultural arts center. In addition to the local cinemas, Playhouse Merced and the Mainzer Theater have full calendars of live performances and films. A variety of speakers and shows make appearances in town, and UC Merced will work with



Financial Aid/Scholarships Director Diana Ralls, Vice Chancellor for Student Affairs Jane Lawrence and Residence/Student Life Director Valery Oehler at Kollegian Library topping out ceremony.

student clubs and organizations to add to those events.

In addition, Modesto (45 minutes to the north of Merced), Fresno (one hour to the south of Merced) and the San Francisco Bay area (two hours to the west of Merced) have an abundance of museums, theaters, arts centers and events. The San Joaquin Valley region is home to a variety of attractions including Hershey's Visitors Center in Oakdale, the Lee Institute for Japanese Art in Hanford, Hilmar Cheese Factory, Castle Air Museum, and Mariposa Museum and History Center, with many other destinations to be found on the Merced Conference and Visitors Bureau website at http://www.yosemitegateway.org/ attractions.htm

CAMPUS AND STUDENT CONDUCT POLICIES

UC Merced strives to create an environment that fosters individual growth, freedom of expression and sense of community. The viability of this community depends on a common understanding among its members regarding their rights and responsibilities. The UC Standards of Conduct for Students (from University of California Policies Applying to Campus Activities, Organizations and Students) lays the foundation for that understanding and governs the conduct of all University of California students. It articulates the University's expectations regarding standards of conduct - in both academic and non-academic settings. In addition, the campus Principles of Community further reinforces the expectations, obligations and privileges of participating as a member of the UC Merced community.

CAREER SERVICES CENTER

The UC Merced Career Services Center, located on the first floor of the Kolligian Library, assists students with a wide range of career-related programs and services, together with both on- and off-campus employment opportunities. The Career Services Center staff helps students to learn about their unique interests and abilities, explore career options, determine career goals and develop skills to conduct a successful job search. The Center, in collaboration with the Student Advising and Learning Center, also assists students interested in pursuing graduate or professional education following graduation from UC Merced.

To schedule an appointment with one of the Career Services Center staff, please call (209)724-2991. You can also contact us at careerservices@ucmerced.edu.

ON-CAMPUS STUDENT EMPLOYMENT

The Career Services Center coordinates all on-campus, part-time student employment. Students can view current listings and apply for on-campus positions online at the Career Services Center website at careers.ucmerced.edu.

INTERNSHIP PROGRAMS

Internship programs provide students with the opportunity to obtain career-related work experience in local, regional and national, profit and nonprofit organizations. Students may complete internships, some of which may be paid, during the academic year or during the summer. Employers from all fields are increasingly expecting students to have internship experience in addition to their academic preparation. To take advantage of internship opportunities related to any area of academic study, contact the Career Services Center at careerservices@ucmerced.edu.

COUNSELING AND HEALTH SERVICES

Health and wellness services will be provided for UC Merced students in the Joseph Edward Gallo Recreation and Wellness Center, scheduled to open in the fall of 2006. During the 2005-06 academic year, basic health services will be provided from offices in the Valley Terrace Residence Life Complex. Psychological counseling services will be available in the Counseling Center on the first floor of the Kolligian Library.

Health and counseling services will enable you to pursue your academic and personal goals in an optimal state of physical, psychological, and emotional health. The campus will provide basic treatment and prevention services that enhance and maintain your physical, emotional and social well-being. These services will be provided by professionals and will range from treating illness and injury to health promotion and counseling. Professionals and peer counselors will provide information on issues such as alcohol and drug use, safety, sexual health, stress management, nutrition and body image, and smoking cessation. Through our programs and services, we seek to encourage students to become active life-long participants in their health and wellness.

All students are eligible to use on-campus services at the University Health Center. These include injury and illness visits with a healthcare professional, appointments with a health educator, laboratory testing, pharmacy, immunizations and injections, and health education. Most of the core services are covered by registration and health fees and are provided at no additional cost to you when you visit, with the exception of lab tests, pharmaceutical products and immunizations.

All students attending a UC campus are required to have major medical health insurance as a nonacademic condition of enrollment. You are automatically enrolled in the University's Student Health Insurance Plan (SHIP) and are charged a health insurance fee as part of registration. This affordable health insurance plan supplements the campus services available at the University Health Center and provides extended services when you need them.

If you are covered by other health insurance, the SHIP requirement may be waived if you can show that your coverage is comparable to that available under the University plan. If SHIP is waived, you are still eligible, like all other students, to use on-campus health and counseling services. For further information on insurance, including SHIP waivers, health or counseling services, contact the University Health Center at health@ucmerced.edu.



Sierra Nevada Research Institute Director Sam Traina (foreground) leads a hydrology session in Yosemite National Park for San Joaquin Valley science teachers.

IF YOU ARE THINKING ABOUT A CAREER IN TEACHING...

UC Merced can help you prepare! California urgently needs teachers in many fields, especially in science and mathematics. An additional special need in the San Joaquin Valley is for teachers of English. Your undergraduate education at UC Merced can give you the subject expertise to teach in these fields. In addition, UC Merced's Student Advising and Learning and Career Services Centers can help you plan for the coursework and exams required to be admitted to fifth-year teaching credential programs offered at University of California or California State University campuses. UC Merced is working in conjunction with CSU Stanislaus, the closest CSU campus to UC Merced, on special pathways to credential programs. Emphasis will be placed on special pathways to math, science and English credential programs for UC Merced students.

MANDATORY HEPATITIS B REQUIREMENT

The California State Health and Safety Code mandates that all students entering the University of California who are under the age of 19 years old must be immunized against or provide proof of immunity from the Hepatitis B virus prior to enrollment. Students are required to provide the University Health Center with documentation demonstrating their compliance to prevent delays with enrollment. For more information regarding immunizations, contact the University Health Center, health@ucmerced.edu.

DISABILITY SERVICES

The Disability Services Center, located on the first floor of the Kolligian Library, supports students with disabilities by providing them with opportunities to participate fully in the academic community at UC Merced. Students with varying types of disabilities including those with mobility, visual, hearing, learning disabilities and other chronic medical conditions may be eligible for the provision of reasonable disability accommodations through this program.

Students who have a qualifying disability must provide appropriate documentation about their disability(ies) to the Disability Services Office.

Documentation provided to the office is confidential and is used solely for purposes of determining the student's eligibility and the appropriate accommodations to be made. It is the responsibility of the applicant or student to provide this documentation and, if necessary, to pay for the cost of the documentation provided, including the cost for professional assessments for disabilities, such as learning disabilities, attention deficit disorder and psychological/ psychiatric disabilities. UC Merced staff assists qualified students from the point of their admission to graduation. Specialized services may include testing accommodations, priority registration, mobility assistance, adaptive equipment, readers, note-takers, interpreters, real-time captioning, liaison with faculty and campus departments, and special parking.

The provision or use of a disability accommodation does not guarantee or ensure a certain level of academic achievement for the students. Students with disabilities must meet the same standards as all other students. Depending on the type of academic accommodation requested by the student, the approval of the appropriate School dean may be required.

Students with disabilities who need staff or time intensive accommodations (e.g., reader services, interpreter services, text conversion, etc.) should contact the Disability Services Office as soon as possible to make necessary arrangements for these services. It is the student's responsibility to assure that such notification occurs in a timely fashion. Failure to do so may delay or in some cases preclude our ability to provide certain accommodations.

For further information on disability services, contact the Disability Services Office at disabilityservices@ucmerced.edu.

LIVING OFF CAMPUS

A variety of off-campus housing options are highlighted on the UC Merced website, where information about local apartment complexes and links to rental listings will be updated each semester. The site includes average rental rates, amenities of the complex, distance from local services and contact information. When possible, photographs of the apartment facilities are included. In addition to this service, local landlords and homeowners will be encouraged to list their rental properties or rooms for rent with our Off-Campus Housing listing service. Please go to the campus Student Life website at http://students.ucmerced.edu or contact the Office of Residential Life for more information about living off-campus in Merced and Atwater.



On-campus residents will enjoy apartment-style housing with the latest features for high-tech learning and comfortable living.

LIVING ON CAMPUS IN MERCED

As one of the pioneer students at UC Merced, you will find that living on campus will help you make friends and become familiar with the growing campus. Student and full-time residential life staff will live on campus, providing the resources, programs and services that are essential to a safe and comfortable living environment.

UC Merced's first residential community, the Valley Terraces, will offer apartment-style suites located in nine two-story buildings. Some halls will feature living-learning themes, such as Community Service and Arts & Culture. All will plan field trips, workshops and events for getting to know faculty better. Each suite has two or three bedrooms attached to a furnished living room. Bedrooms will have a bed, desk, bookshelf and closet space for each resident. A limited number of singles also will be available for graduate students and resident advisors. Study, recreation, laundry, meeting rooms and mail facilities are located in the Terrace Center near the Student Housing administrative offices.

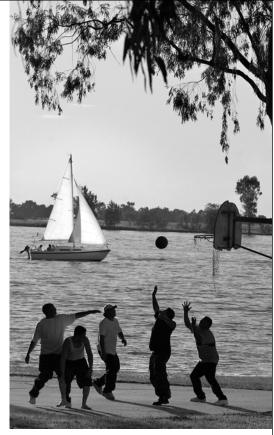
It is our goal to provide on-campus housing to approximately 50 percent of our students, and our first residence complex will house 600 students. Room and board rates, once established, will be posted on the UC Merced website at http://students.ucmerced.edu/. All freshmen, transfers and graduate students are encouraged to consider on-campus housing. On-campus housing options will continue to expand, as the campus grows, with an additional 400 beds available in the fall of 2007.

For further information about housing, on- or off-campus, contact the Office of Residence Life at housing@ucmerced.edu, (209) 724-2989, or check our website at http://students.ucmerced.edu.

RECREATIONAL ACTIVITIES

As a UC Merced student you will benefit from the campus commitment to wellness. The Joseph Edward Gallo Recreation and Wellness Center will serve as the physical "home" of wellness and will offer a range of wellness activities from student peer counseling and nutrition programs to aerobic classes and whitewater rafting excursions.

Recreational opportunities will be plentiful at UC Merced. Immediately adjacent to the campus, Lake Yosemite offers swimming, boating and other outdoor activities. The city of Merced has an extensive network of biking and running paths, as well as city parks including a zoo and children's amusement area. The nearby Yosemite, Seguoia, and Kings Canyon National Parks and other Sierra recreation areas will provide easy access to a broad range of outdoor sports such as snow skiing and snow boarding, hiking and backpacking, boating, whitewater rafting and kayaking, horseback riding and much more. There is a daily shuttle



Playing basketball at Lake Yosemite.

service to Yosemite from Merced. See the following website for schedules: www.yarts.com. Not far from Merced are a number of golf courses including Stevinson Ranch, voted the second-best golf course in California.

Campus Recreation will organize a variety of activities and excursions. When completed, the Joseph Edward Gallo Recreation and Wellness Center will feature a full complement of fitness classes, cardiovascular machines, weights and drop-in recreation such as basketball and volleyball. Campus Recreation staff also will coordinate intramural sports programs based upon student interest.

STUDENT ADVISING AND LEARNING CENTER

UC Merced faculty and staff are committed to the academic success of every student. The Student Advising and Learning Center, located on the first floor of the Kolligian Library, is responsible for advising students who are undecided about their majors, students who are interested in pursuing professional programs (e.g., medicine, dentistry, law) following graduation, and any student who has questions about degree or University requirements. The advisors in the Student Advising and Learning Center work closely with the faculty and advisors in the Schools to ensure that students receive accurate and timely advising. The Student Advising and Learning Center also assists students to acquire the skills they need to develop intellectually, become successful learners and achieve their academic goals. Center staff will offer programs focusing on effective study skills, critical reading and analytical writing that will help all students, regardless of major. Mathematics, science and writing courses sometimes present challenges for learners. Individual tutoring and group study sessions, often led by peer tutors, will be available to provide assistance to students of all levels of ability and preparation. Additional programs and study sessions will assist students in specific courses and areas such as engineering, English, math, science and the social sciences. The Student Advising and Learning Center, working closely with Career Services, will ensure that students receive the support they need to plan and succeed in their chosen course of study, and

beyond. Students with advanced skills in science, math or writing should speak to their professors or staff at the Center to find out how to become a trained, paid tutor on campus. Contact the Student Advising and Learning Center for more information at learning@ucmerced.edu.

STUDENT GOVERNMENT, CLUBS AND ORGANIZATIONS

The first UC Merced students will have the unique opportunity to establish UC Merced's Associated Student government, as well as the first clubs and organizations that will enrich campus life. These organizations will provide opportunities for students with common interests to help shape the direction of the new campus, build friendships, learn from each other and provide opportunities for social and academic networking. Check the Student Life section of our website at http://students.ucmerced.edu/ or e-mail: studentlife@ucmerced.edu for further information.

Student services contact list, for further information:

- Website: http://students.ucmerced.edu
- E-mail: careerservices@ucmerced.edu
- E-mail: disabilityservices@ucmerced.edu
- E-mail: health@ucmerced.edu
- E-mail: housing@ucmerced.edu
- E-mail: learning@ucmerced.edu
- E-mail: studentlife@ucmerced.edu



A Merced Shakespeare Festival production of "As You Like It" is performed outdoors at Applegate Park.

TRANSPORTATION AND PARKING SERVICES

BICYCLES

Bicycles are encouraged and welcomed at UC Merced. With a flat terrain and mild climate, the city and county of Merced offer excellent conditions for bicycle riding. In addition, the city of Merced boasts over 12 miles of class one, grade-separated bike paths, which, along with the city's other bike lanes, connect most of Merced's open- space park system. Special areas have been set aside near UC Merced's academic buildings for bicycle parking. If you plan to bring your bicycle to campus, you are encouraged to register your bicycle. It is usually a quick and simple process, and the costs are minimal. Bicycles may be registered in Merced at:

The City of Merced Police Department

611 West 22nd Street Merced, CA For more information call (209) 385-6912

PUBLIC TRANSIT

As limited parking will be available on campus, UC Merced encourages students and staff to use alternative public transit. Merced County boasts a full-service, comprehensive transit system. UC Merced is working with the public transit authority to provide bus service to and from the campus via various routes within Merced County.

VEHICLE PARKING

Parking, while limited, will be available on campus. Some parking will be reserved specifically for students living on campus in the residence halls. Traffic will be restricted within the academic core of the main campus. All vehicles parking anywhere on campus must display a valid regular or visitor UC Merced parking permit from 7 a.m. to 4 p.m. daily, Monday through Friday. New and commuter students will have an opportunity to purchase parking permits during orientation or prior to the start of classes each semester. Parking permits may also be obtained from the Cashier's Office located on the first floor of the Kolligian Library. There will be a fee for permits. Information on fees can be obtained from our website in the summer of 2005.

Transportation and Parking Services

UC Merced – Facilities (209) 724-4320



Bike race past the Merced County Courthouse Museum.

PARTNERSHIP WITH LAWRENCE LIVERMORE NATIONAL LABORATORY

In 2000, UC Merced and Lawrence Livermore National Laboratory signed an agreement to collaborate on mutual goals for research and education. Livermore has a history of creating science and engineering teams to work on areas such as environmental sciences, advanced computing and biotechnology. This integration will strengthen UC Merced research and teaching programs in natural sciences and engineering. Livermore also has years of service in engaging students and K-12 teachers in hands-on science education. UC Merced has partnered with Livermore and UC Davis in sponsoring the Edward Teller Education Center, which supports professional development for teachers.

AVERAGE ANNUAL EXPENSES

The range of estimated nine-month expenses, including fees, for students attending UC Merced during the 2004-2005 academic year are shown below. Cost-of-living expenses are adjusted annually and fees are subject to change. These figures are only a guide in computing average expenses, and your own living expenses may differ somewhat from these. If you will need funds beyond those that you and your family can provide, you should apply for financial aid well in advance of enrollment. Please see the appropriate Undergraduate or Graduate sections on Financial Aid and Scholarships for more information.

AVERAGE ANNUAL EXPENSES (ESTIMATES ONLY)

Student Status	Living Arrangement	Estimated Nine-	
		Month Expenses	
Undergraduate (California resident*)	On campus	\$20,236	
	Off-campus	\$18,636	
	At home	\$14,771	
Graduate (California resident*)	Off campus	\$21,776	

^{*}Nonresident undergraduate students should add \$17,820 and nonresident graduate students should add \$14,961 for additional fees and nonresident tuition.

STUDENT FEES

2005-06 FEE SCHEDULE Note: Fees shown are per semester

UNDERGRADUATES	Residents	Nonresidents
University registration fee	\$367.50	\$367.50
Educational fee	\$2,703.00	\$2,961.00
Health Services fee	\$50.00	\$50.00
Transportation fee	\$35.00	\$35.00
Student Life fee	\$15.00	\$15.00
Associated Students fee	\$10.00	\$10.00
Recreation fee	\$146.00	\$146.00
Student Health Insurance Plan*	\$285.00	\$285.00
Nonresident tuition fee	N/A	\$8,652.00
TOTAL	\$3,611.50	\$12,521.50

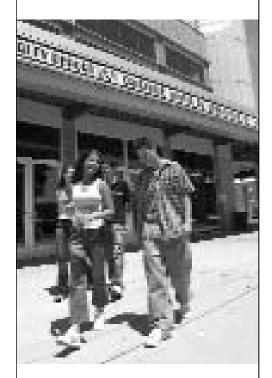
GRADUATES	Residents	Nonresidents
University registration fee	\$367.50	\$367.50
Educational fee	\$3,081.00	\$3,214.50
Health Services fee	\$50.00	\$50.00
Transportation fee	\$35.00	\$35.00
Student Life fee	\$15.00	\$15.00
Graduate Student Association fee	\$10.00	\$10.00
Recreation fee	\$146.00	\$146.00
Student Health Insurance Plan*	\$484.00	\$484.00
Nonresident tuition fee	N/A	\$7,347.00
TOTAL	\$4,188.50	\$11,669.00

^{*} Undergraduate and graduate students must purchase the Student Health Insurance Plan (SHIP) or request a waiver of this fee. The Undergraduate health insurance fee for the Spring Semester is \$384.00 because it provides coverage from January 5, 2006 until August 20, 2006. Graduate Students who wish to cover domestic partners, spouses or children should contact Health Services at health@ucmerced.edu for rates.

All fees are accurate as of the date published and are subject to change without notice. Detailed information regarding on-campus room and board charges is available at www.ucmerced.edu.

COURSE MATERIALS FEES

Students may be charged fees in some courses for the use, rental or consumption of materials, tools or equipment, or for the costs of materials or services necessary to provide a special supplemental educational experience. For example, course materials fees may cover the purchase of chemicals and glassware for a science laboratory or art supplies for a studio class. They might also cover film rentals, field trips or the purchase/rental of specific equipment. Courses that are subject to the course materials fee are listed in the Schedule of Classes.



UC EMPLOYEE-STUDENT FEES

Reduced fees are available to UC career employees and certain UC retirees who are eligible for admission to the university. Once admitted, the employee-student must file a petition for the reduction in fees before each semester of enrollment. Employee-students pay one-third of the full-time registration fee and one-third of the full-time educational fee. Employee-students may enroll for up to nine units or three courses per semester, whichever is greater. Contact the Human Resources office for further information.

PART-TIME STUDY

Students approved for enrollment on a part-time basis pay the same fees as full-time students, but pay only one- half of the educational fee. Part-time, nonresident students pay one-half of the nonresident tuition fee. Undergraduate students must file their petition for part-time study with the Office of the Registrar. Graduate students must file their petition with the Division of Graduate Studies. For more information on the eligibility requirements for part-time study, please see the Academic Policies section of this catalog.



The Golden Valley High School Jazz Quartet performs at Bobcat Day.

MOTOR VEHICLE PARKING PERMIT

All vehicles parking anywhere on campus must display a valid regular or visitor UC Merced parking permit from 7 a.m. to 4 p.m. daily, Monday through Friday. Parking permit rate information is available at Parking Services.

Transportation and Parking Services

UC Merced – Facilities (209) 724-4320

PAYMENT OF REGISTRATION FEES

Registration at UC Merced is a two-step process: (1) enrollment in classes and (2) payment of fees. You must enroll first so that your fees can be assessed. You can pay fees anytime after you enroll in classes, but a failure to pay fees in full by the 10th day of instruction will result in you being dropped for non-payment and officially withdrawn from the university.

A billing statement will be available to you after enrollment; however, if you wait to enroll just prior to the enrollment deadline, do not wait for a billing statement to pay your fees. Fees are due and payable by the published deadline whether or not a billing statement is available

Your billing statement from the university will list credits and charges. Credits include all payments as well as financial aid disbursements. Charges include registration fees, housing charges, parking charges and charges for other services. If you are a financial aid recipient, the funds disbursed through UC Merced will be applied to allowable charges on your account. Financial aid disbursed, less allowable charges, will be refunded to you. You are responsible for the payment of any charges not covered by your financial aid.

REGISTRATION AND OTHER PAYMENTS THROUGH THE CAMPUS CASHIER'S OFFICE

You must make your registration payment as soon after enrollment as possible. The campus Cashier's Office accepts payments for all university services. Checks or money orders should be made payable to UC Regents. Additional payment options will be available.

DEADLINES AND PENALTY FINES

You must pay all prior delinquent debts prior to registering. An additional charge will be made for failure to pay required fees or deposits by the dates announced. If you enroll in courses after the enrollment deadline, you may be assessed a late enrollment fee and/or a late payment fee.

RETURNED CHECK POLICY

Campus cashiering at UC Merced accepts personal checks as well as cash payments. Any individual who writes checks with insufficient funds will be subject to all legal action deemed appropriate by the university and will be assessed a fine currently set at \$20 per returned check. In addition, anyone who writes to the university three or more checks that are subsequently returned will have his/her check writing privileges permanently revoked.

FEE REFUNDS

CANCELLATION, WITHDRAWAL AND FEE REFUNDS

To cancel registration before the first day of instruction or to withdraw from the university on or after the first day of instruction, you must complete a Cancellation/Withdrawal form and return the form to the Office of the Registrar. If you do not submit a Cancellation/Withdrawal form, you will be liable for fees according to University policy (below). It is very important that you contact the Office of the Registrar and initiate withdrawal/leave of absence procedures even if your fees are fully paid by financial aid or other programs. Failing to do so may result in you owing money to the university.

The effective date for determining a refund of fees is the date a completed Cancellation/Withdrawal form is received by the Office of the Registrar. It is presumed that no university services will be provided to the student after that date. If a student is enrolled in classes, he or she will be dropped from all courses automatically when the Cancellation/Withdrawal form is processed.

The percentage of fees that may be refunded is determined by the number of calendar days (not school days) elapsed, beginning with the first day of instruction of the semester. For students who paid fees and then canceled or withdrew by filing with the Office of the Registrar, fees may be refunded according to the Schedule of Refunds.

New undergraduate students:

The \$100 deposit paid with the Statement of Intent to Register (SIR) is not refundable. Because it is not refundable, it is not included in the balance when applying the Schedule of Refunds. Thus, before or on the first day of instruction, registration fees paid are refunded in full minus \$100.

All continuing students, readmitted students and new graduate students:

On or before the first day of instruction, registration fees are refunded in full minus a service charge for cancellation/withdrawal. After the first day of instruction, the Schedule of Refunds is applied to the total of fees assessed.

Failure to submit a Cancellation/Withdrawal form:

If you are not a financial aid recipient and you fail to submit a Cancellation/Withdrawal form to the Office of the Registrar, you will be presumed to have left at the end of the semester and will not be eligible for a fee refund. If you are a financial aid recipient, you must contact the Office of Financial Aid and Scholarships for information on how this will affect your refund.

SCHEDULE OF FEE REFUNDS

The Schedule of Fee Refunds applies to all new students who do not receive federal financial aid* and continuing and readmitted students.

The Schedule of Refunds refers to calendar days beginning with the first day of instruction of the semester. The number of days elapsed is determined from the date the completed Notice of Cancellation/Withdrawal form is received in the Office of the Registrar. Percentages listed (days 1-54) should be applied respectively to the university registration fee, educational fee, nonresident tuition and other student fees.

University Registration Fee, Educational Fee, Nonresident Tuition and Other Student Fees:

CALENDAR DAYS ELAPSED	PERCENTAGE OF FEES REFUNDED		
0-1 days	100% less any applicable fees		
2-11 days	75%		
12-27 days	50%		
28-53 days	10%		
54 days or more	0%		

*New students who receive federal financial aid and withdraw during their first academic term may be refunded fees according to a Modified Fee Refund Schedule, available at the Office of Financial Aid and Scholarships.

Federal regulations require UC Merced to calculate the amount of federal financial aid that has been "earned" for all students who are receiving financial aid and withdraw from UC Merced during a semester. If the student withdraws prior to completing 60 percent of the semester, 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 UC Merced will be deducted from the amount of the tuition and fee refund. If the amount UC Merced must return to federal aid programs exceeds the amount of the student's institutional refund, the student's account may be billed for the balance.



New UC Merced student Veronica Young, with her parents at Bobcat Day.

REFUND OF HEALTH INSURANCE FEE

Health insurance is mandatory for all students, both graduate and undergraduate, as a non-academic condition of enrollment. All students will be assessed the health insurance fee; however, students who already have adequate health insurance should request a waiver of this fee. If you have paid the health insurance fee and cancel your registration on or before the first day of instruction, you are entitled to a full refund of this fee. Insurance fees are not refundable after the first day of instruction and coverage remains in effect until the last day of the term.

OTHER REFUNDS

Charges other than the registration fee, the educational fee, nonresident tuition and campus-based fees are refunded according to guidelines and schedules published by the appropriate department.

UNDERGRADUATE ADMISSIONS

UNDERGRADUATE ADMISSION

Prospective students interested in attending the University of California, Merced are encouraged to contact the Admissions/ Relations with Schools and Colleges well in advance of their intended entrance. The office provides information and advice for prospective students as they prepare for university work. Future UC Merced students planning to enroll as freshmen or transfer students can get assistance in planning their pre-university course work and with the application process. If you are interested in enrolling at UC Merced, Admissions/Relations with Schools staff members are available to assist you via e-mail, telephone or in person.

ADMISSIONS/RELATIONS WITH SCHOOLS AND COLLEGES (ARSC)

5200 N. Lake Road

Merced, CA 95340

(209) 381-7880

(866) 270-7301 (toll-free in California)

Website: http://students.ucmerced.edu (Click on Admissions link)

E-mail: admissions@ucmerced.edu

Campus tours

Admissions presentations

• Application workshops

Pre-application advising

• Transfer advising

• Transfer Admission Guarantees

UC MERCED OFFICE OF FINANCIAL AID AND SCHOLARSHIPS

5200 N. Lake Road

Merced, CA 95340

(209) 724-4384

Website: http://students.ucmerced.edu (Click on Money Matters link)

E-mail: finaid@ucmerced.edu

• Grants, loans, scholarships information

• Financial aid application information

• Prospective student financial aid assistance

UNIVERSITY OF CALIFORNIA ONLINE RESOURCES

Admissions information: www.ucop.edu/pathways

AP and IB Examination information: www.ucop.edu/pathways

Quick reference for counselors: www.ucop.edu/pathways

Online application: www.universityofcalifornia.edu/apply

Approved high school courses: https://pathways.ucop.edu/doorways

Transferable California Community College courses: www.assist.org

Admissions examination information: www.collegeboard.com, www.act.org

Financial aid information: www.ucop.edu/pathways/finaid

ACT code: 000450 **College Board code:** 004129

Financial Aid code: 001313 (Same as UC Davis)

Filling out Student Experience Questionnaire at Bobcat Day: student leadership will create new clubs, organizations and activities at UCM.

APPLICATION PROCESS

HOW TO APPLY

The University of California Undergraduate Application for Admission & Scholarships is available online at http://www.universityofcalifornia.edu/apply. Students may apply to UC Merced and any number of the additional eight general campuses of the University of California with one application. The San Francisco campus, which is devoted to the health sciences, has its own application and filing procedures.

Students who cannot apply online at their home, school or local library may visit the Admissions/Relations with Schools and Colleges (ARSC) to apply online using one of our free-access computers for prospective students (open 9 a.m. to 5 p.m. Monday through Friday, excluding university holidays). If you do not have access to the online application and cannot travel to Merced, you may contact ARSC for assistance. The application for admission is also available in paper format and can be obtained from California high school guidance offices, community college transfer centers and UC campus Admissions and Relations with Schools offices. It can be downloaded in printable format from the website at www.universityofcalifornia.edu/apply.

WHEN TO APPLY

To ensure that applicants are considered for admission, the completed application and the application fee should be postmarked (or electronically filed) during the priority filing period shown below. Prospective applicants who have not filed during the priority filing period should contact Admissions/Relations with Schools and Colleges for more information about the advisability of filing a late application.

SEMESTER OF ATTENDANCE	PRIORITY FILING PERIOD
Fall	November 1 – 30
Spring	July 1 – 31

The online application center opens for fall applications prior to November 1, usually during early October, and in late June for spring applications. Students can begin the application, save their information on the secure site and continue filling out the application at their convenience up to the filing deadline. Applicants must meet the deadline (last day of the application filing month). Students who miss the November 30 deadline for fall or the July 31 deadline for spring should contact ARSC for assistance.

APPLICATION ADVICE

All applicants are asked to submit self-reported academic records on the application. Obtain copies of your grades and test scores prior to completing the application. Do not rely on memory. Your admission to UC Merced is provisional, based on verification of the information you provide. If admitted, you will be asked to submit final, official transcripts from all schools and colleges attended and official test score reports for the purpose of verifying the information you provided on your application.

APPLICATION ACKNOWLEDGEMENT

After you submit your application for admission you will receive notification that it was received. If you do not receive notification that UC Merced received your application within six weeks of submitting it, contact ARSC immediately by calling (866) 270-7301 or sending an e-mail message to admissions@ucmerced.edu.

NOTIFICATION AND ENROLLMENT

All on-time applicants for admission to a fall term will be notified of their admission decision between March 1 and 31 (freshman applicants) and March 1 through April 30 (transfer applicants). To reserve your space after being admitted to the entering class, you must submit the Statement of Intent to Register (SIR) along with a \$100 deposit by May 1 for freshmen and June 1 for transfers. If you cannot afford the \$100 deposit, contact ARSC immediately. Applicants for spring term will be notified of their admission decision between September 1 and October 7. The SIR deadline for spring semester is typically October 15. Admission is specific to a particular semester. If you have questions about deferring your admission to another semester, contact ARSC for assistance.



UC Merced graduate student Nelson Rivera at UC Merced Health Sciences Fair.

APPLICATION FEES / FEE WAIVER

Students applying to UC Merced must submit the application fee along with the paper application or following the submission of the online application. If you apply to more than one campus, a per-campus fee must be submitted. Application fees are not refundable.

If you cannot afford the application fee and you are a U.S. citizen or permanent resident, you may request a fee waiver in advance or at the time of submitting the online application. If your family income and the number of dependents in your household meet specifications of the University of California fee waiver guidelines, the fee will be waived for a maximum of four campus choices. Students who qualify for fee waivers and who wish to apply to more than four campuses must pay a fee for each additional campus choice.

HOW TO OBTAIN A FEE WAIVER

High school students may use the College Board fee waiver, available from your school counselor, or may obtain a fee waiver authorization from any UC campus Admissions and Relations with Schools or Educational Opportunity Program office. California community college students enrolled in an Extended Opportunity Programs and Service (EOPS) program can obtain a fee waiver authorization from the EOPS office. All students: If you cannot afford the application fee and meet fee waiver guidelines, you can request a fee waiver authorization from any UC campus Admissions, Relations with Schools or Educational Opportunity Programs and Services office, or simply request a fee waiver when you submit the online application. Be prepared to answer questions about your gross family income and family size.

CATEGORIES OF APPLICANTS

- Undergraduate or regular status applicants are students who wish to enroll in an established curriculum of a school at UC Merced for the purpose of completing the Bachelor of Arts or Bachelor of Science degree.
- Freshman applicants are students who are currently enrolled in high school at the time of application or students who have graduated from high school or have completed a California Certificate of Proficiency, an equivalent proficiency examination from another state or the General Education Development(GED) certificate but have not enrolled in a college or university since the summer after leaving high school.
- Transfer applicants are students who have enrolled in a regular term at a college or university after leaving high school. Students who meet this definition cannot disregard their college record and apply as freshmen.
- Nonresidents are applicants whose legal permanent residence (as determined by the University) is outside of the State of California. Nonresident applicants are generally required to pay nonresident tuition and must also present a higher grade point average than is required of California residents.

- International applicants are students who hold or expect to hold student, exchange, visitor or diplomatic visas. International applicants are required to pay nonresident tuition and must also present a higher grade point average than is required of California residents. Prospective international students are encouraged to contact the Office of Admissions/Relations with Schools and Colleges for information well in advance of the application filing period.
- Second baccalaureate applicants are college or university graduates whose educational objective has changed substantially after receiving the bachelor's degree. Applicants for the second bachelor's degree must be fully eligible for admission to UC Merced and have strong promise of academic success in the new major. All such admissions are subject to the approval of the dean of the UC Merced School in which the second degree will be earned. Candidates for a second bachelor's degree are subject to the general requirements for the bachelor's degree and to the particular requirements of the School in which they are enrolled.
- Limited status applicants are students whose special attainments qualify them to take certain courses in the university toward a definite and limited objective. To apply for limited status admission, students must either have a bachelor's degree but not be a candidate for an advanced degree, or have completed a substantial amount of college work with satisfactory grade point average. Prospective students must submit an undergraduate application with fees as well as a limited status petition and official transcripts from all schools attended. Limited status students are expected to maintain a certain scholarship average during a predetermined time of enrollment. Admission requires the approval of the dean of the School in which the student intends to study.
- Special status applicants are 21 years of age or older who have not had the opportunity to complete the full requirements for admission or who have not completed a substantial amount of college work, but for reason of special attainment or background may be prepared to undertake certain courses at UC Merced toward a definite and limited objective. Conditions for special status are determined by the director of admissions and are subject to the approval of the dean of the School in which the student wants to study. Approval to matriculate also must be made by the School dean. Application, fees and filing dates are the same as those for new applicants and a petition for special status must be submitted with the application.

READMISSION TO UC MERCED

Students who were formally admitted, registered and enrolled at UC Merced, then interrupted their studies for any length of time other than summer, must apply for readmission to the campus. The application for readmission is available from the Office of the Registrar.

IMPORTANT DEADLINES RELATED TO ADMISSION

November 30	November 30 Application priority filing deadline for admission to fall semester	
March 2	Financial aid priority deadline: FAFSA and CAL Grant GPA verification	
	Check the Financial Aid section of the UC Merced catalog for more information and deadlines	
May 1	Statement of Intent to Register (SIR) fall semester deadline: freshmen	
June 1	Statement of Intent to Register (SIR) fall semester deadline: transfers	
July 15	Final, official transcripts due to ARSC (fall term applicants)	
July 31	Application priority filing deadline for admission to spring semester	
October 15	Statement of Intent to Register (SIR) spring semester deadline	
December 15	Final, official transcripts due to ARSC (spring term applicants)	

PREPARING FOR UNIVERSITY WORK

As a prospective UC Merced undergraduate, you are encouraged to give careful thought to preparing yourself adequately in reading, writing, mathematics and other subject areas relevant to your intended major. Many undergraduate majors require preparation in mathematics beyond the three years required for admission to the University. The more comprehensive and challenging your high school or college program is, the better prepared you will be for your course work at UC Merced. Honors-level, Advanced Placement and college courses are good preparation for UC Merced. These challenging courses will help you develop the good study habits and skills you will need at UC Merced. Give priority to completing the high school or college course patterns required for admission and for your interest area. Check the UC Merced Admissions website at http://students.ucmerced.edu for the most current information.

University of California Entry-Level Writing Requirement/Analytical Writing Placement Exam (formerly Subject A) Every undergraduate is required to demonstrate an acceptable level of ability in English composition. For further details on the UC Entry-Level Writing Requirement and Analytical Writing Placement Exam, see the General Education section of this catalog.

FRESHMAN ADMISSION

California Residents

There are three pathways of eligibility for resident students to enter UC Merced as freshmen: eligibility in the statewide context, eligibility in the local context and eligibility by examination alone.

Eligibility in the statewide context is the path by which most students attain UC eligibility. To be eligible in the statewide context, students must satisfy the **subject, scholarship** and examination requirements described below.

SUBJECT REQUIREMENT

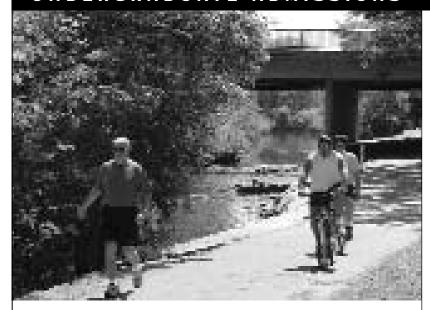
To satisfy the subject requirement you must complete, with grades of C or better, the 15 units of high school course work listed in the following subject pattern, known as the A-G subjects or requirements. A one-year course is equivalent to one unit and a one-semester course is equal to one-half unit. Courses certified to meet the A-G requirements are identified for each California high school on the UC-certified course list available online at www.ucop.edu/doorways, or in paper format from your principal or guidance counselor. Courses from schools and colleges outside California must provide the same rigor and level of instruction to meet the A-G requirements.

A-G Subject Requirements

- **A. History/Social Science:** 2 years required. Two years of history/social science, including one year of U.S. history or one-half year of U.S. history and one-half year of civics or American government; and one year of world history, cultures and geography.
- **B. English:** 4 years required. Four years of college-preparatory English composition and literature. All English courses must require frequent and regular writing and reading of classic and modern literature, poetry and drama. Not more than two semesters of ninth- grade English can be used to meet this requirement. Also, only two semesters of a certified, advanced English-as-a-Second-Language course (ESL or ELD) will be accepted for this requirement.
- C. Mathematics: 3 years required; 4 years recommended. Three years of college preparatory mathematics that include the topics covered in elementary and advanced algebra and two- and three-dimensional geometry. Approved integrated math courses may be used to fulfill part of or the entire requirement, as may courses taken in the seventh and eighth grades that your high school accepts as equivalent to its own math courses.

- **D. Laboratory science:** 2 years required; 3 years recommended. Two years of laboratory science providing fundamental knowledge in at least two of these three disciplines: biology (which includes anatomy, physiology, marine biology, aquatic biology, etc.), chemistry and physics. Laboratory courses in earth 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.
- E. Language other than English: 2 years required; 3 years recommended. 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 a language other than English taken in the seventh and eighth grades may be used to fulfill part of this requirement if your high school accepts them as equivalent to its own courses.
- **F. Visual and performing arts:** 1 year required. One year-long course in a single area of visual and performing arts, chosen from the following: dance, drama/theater, music and/or visual art.
- **G. College-preparatory electives:** 1 year required. One year (two semesters), in addition to those required in "A-F" above, chosen from the following areas: visual and performing arts (non-introductory level courses), history, social science, English, advanced mathematics, laboratory science and language other than English (a third year in the language used for the "e" requirement or two years of another language).

UNDERGRADUATE ADMISSIONS



Nine miles of paved bike and walking paths meander along beautiful, shady Bear Creek and Black Rascal Creek in Merced.

SCHOLARSHIP REQUIREMENT

The scholarship requirement defines the grade point average (GPA) you must attain in the "A-G" subjects to match the eligibility index (described below in Examination Requirement) to be eligible for admission to the university. If your GPA on the "A-G" subjects is at least 2.80 or above, you can satisfy the minimum scholarship requirement if you achieve the necessary test score total.

The university calculates your GPA in the "A-G" subjects by assigning point values to the grades you earn, totaling the points and dividing by the total number of "A-G" course units. Points are assigned as follows: A=4 points, B=3 points, C=2 points, D=1 point and F=0 points. Only the grades you earn in "A-G" subjects in the tenth, eleventh and twelfth grades are used to calculate your GPA. Courses you take in ninth grade can be used to meet the subject requirements if you earned grades of C or better, but they will not be used to calculate your GPA.

- Honors courses: The University assigns extra points for up to 4 units of certified honors-level and Advanced Placement courses taken in grades 10 12: A=5 points, B=4 points and C=3 points. No more than 2 units of certified honors-level courses taken in grade 10 may be assigned extra points. Grades of D are not assigned extra points. The courses must be in the following "A- G" subjects: history, English, advanced mathematics, laboratory science and visual and performing arts. In these fields, as well as in the fields of computer science and social science, courses that are designed to prepare students for Advanced Placement Examinations, the International Baccalaureate Higher Level Examination and college courses that are transferable to the University are acceptable honors-level courses.
- **D/F and repeated grades:** Students who receive D and F grades in "A-G" courses must repeat those courses with grades of C or better. In the subject areas of mathematics, chemistry and foreign language, however, a D or F grade can be "validated" by earning a C grade or better in the second semester or more advanced level in the same subject. Courses that have been "validated" with a more advanced-level course cannot be subsequently repeated for a better grade. Consult with the Office of Admissions/Relations with Schools and Colleges or your counselor to deter-

mine how D or F grades can be improved and how the University will use them in evaluating your scholarship record. Grades will not be used for repeated courses in which you initially received a C or better.

EXAMINATION REQUIREMENT

Students applying for admission during November 2005 for the Fall 2006 term must submit the following test scores:

- Either the ACT Assessment Plus Writing test, or the SAT Reasoning Test, and
- Two SAT Subject Tests (formerly SAT II Subject Tests), in two different subject areas selected from history, literature, mathematics (Math Level II only), science or a language other than English.

The University will use the highest test scores you earn in computing your eligibility for admission, and there is no penalty for taking the examinations more than once. For more information about taking the tests to fulfill the examination requirement, visit the website: www.universityofcalifornia.edu/admissions/ or talk to your school counselor.

Information for the ACT is available at www.college-board.com and for the SAT at; www.act.org.

For more information about taking the tests to fulfill the examination requirement, talk to your school counselor or contact the appropriate testing organization. Contact information for the SAT is available at www.collegeboard.com; for the ACT at www.act.org. The University requires you to take these tests no later than December of your senior year. To be eligible in the Statewide Context, your combined test scores must match or exceed the scores indicated for your "A-G" GPA. At time of publication, the eligibility index is not available. Visit the University of California Undergraduate Admissions site for updated information: http://www.universityofcalifornia.edu/admissions/welcome.html

Summer contemporary biology students Stan Stavitsky and Keishia Sheffield flank Natural Sciences Professor Michael Colvin.



UNIVERSITY OF CALIFORNIA, MERCED — 2005-2006 CATALOG

Eligibility in the Local Context

Under the Eligibility in the Local Context (ELC) path, the top 4 percent of students at each participating California high school are designated UC eligible for admission. To be considered for ELC, a student must complete 11 specific units of the "A-G" subject requirements 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. If you are designated UC eligible through ELC, you must submit the University's undergraduate application for admission during the November filing period and complete remaining eligibility requirements - including the subject and examination requirements – to enroll.

Eligibility by Examination Alone

If you do not meet the requirements for Eligibility in the Statewide Context or Eligibility in the Local Context, you may be able to qualify for admission to the University by examination. At time of publication, factors to be used in determining Eligibility by Examination Alone have not been determined. Visit the website: http://www.universityof california.edu/admissions/welcome.html for updated information.

Nonresident Freshmen Applicants

There are two paths to UC eligibility for nonresidents at the freshman level: Eligibility in the Statewide Context and Eligibility by Examination Alone. Both paths are similar to those described above, with the following exceptions:

Scholarship Requirement: Your grade point average in the "A-G" subjects must be 3.4 or higher, regardless of your test scores. At time of publication, examination requirements are under review. For updated information visit http://www.universityofcalifornia.edu/admissions/welcome.html.

MINIMUM ELIGIBILITY VS. SELECTION: FRESHMAN APPLICANTS

If the number of applicants exceeds the spaces available for a particular term or major, UC Merced may use selection criteria beyond minimum eligibility requirements to identify applicants who will be admitted. The following factors may be considered in a comprehensive review of eligible applicants for admission to UC Merced as freshmen:

- Academic grade point average in all required "A-G" courses, including additional points for completion of University-certified honors courses.
- Scores on the SAT I or the ACT, and the SAT II Subject Tests.

- Number, content of and performance in academic courses beyond the minimum "A-G" requirements.
- Number of and performance in University-approved honors courses and Advanced Placement, International Baccalaureate and transferable college courses
- Identification as being ranked in the top 4 percent of your high school class at the end of your junior year ("eligible in the local context").
- Quality of your senior-year program, as measured by the type and number of academic courses in progress or planned.
- Quality of your academic performance relative to the educational opportunities available in your secondary school.
- Outstanding performance in one or more academic subject areas.
- Outstanding work in one or more special projects in any academic field of study.
- Recent, marked improvement in academic performance, as demonstrated by your academic GPA and the quality of course work completed or in progress.
- Special talents, achievements and awards in a particular field, such as visual
 and performing arts, communication or athletic endeavors; special skills, such
 as demonstrated written and oral proficiency in other languages; special
 interests, such as intensive study and exploration of other cultures; experiences that demonstrate unusual promise for leadership, such as significant
 community service or significant participation in student government; or
 other significant experiences or achievements that demonstrate your promise
 for contributing to the intellectual vitality of the campus.
- Completion of special projects undertaken either in the context of your high school curriculum or in conjunction with special school events, projects or programs.
- Academic accomplishments in light of your life experiences and special circumstances.
- Location of your secondary school and residence.

Meteorological station at mountain research site in Sequoia National Park.



UNDERGRADUATE ADMISSIONS

FRESHMEN WITH ADVANCED STANDING

If you complete transferable college courses as defined below or achieve an appropriate score on Advanced Placement or International Baccalaureate Higher Level examinations while in high school, you may receive transfer credits when you enter UC Merced as a freshman. Completing examinations and transferable college courses while still in high school or in the summer immediately following high school graduation does not make you a transfer student, even though you may have earned a significant number of college credits. Tables on the following pages identify the amount and type of transfer credit awarded for appropriate scores in the identified examinations.

TRANSFERABLE COLLEGE COURSES

The University awards transfer credit for courses that are determined by Admissions/Relations with Schools and Colleges to be comparable to those offered for the undergraduate degree at any UC campus, when taken at a regionally accredited institution of higher education. Transferable courses offered by California community colleges are listed on the UC Transferable Courses section of the California public institution articulation database, found on the World Wide Web at www.assist.org.



The Mainzer theater and café in downtown Merced features patio dining and live performances.

ADVANCED PLACEMENT (AP) AND INTERNATIONAL BACCALAUREATE (IB) EXAMINATIONS

The University awards credit for successful completion of the College Board Advanced Placement (AP) and the International Baccalaureate Higher Level Examinations (IB). Students must have official test score reports sent directly from the testing service to UC Merced to receive credit. All credit awarded for AP and IB examinations will be initially categorized as elective unit credit toward the undergraduate degree. Students will meet with advising staff during orientation to discuss which courses or requirements they may have waived based on their scores in these and other examinations.

CREDIT FOR IB EXAMS

The International Baccalaureate Organization (IBO) awards either a diploma or awards a certificate for individual IB exams. Students completing the IB diploma with a score of 30 or above will receive a total of 20 semester units of elective credit toward their UC Merced undergraduate degree, as approved by UC faculty for implementation in 2002. To complete the IB diploma, students are required to take one subject from each of the six subject groups and complete an extended essay. At least three of the six subjects must be taken at the Higher Level. The University grants 5.3 semester units to students who receive IB certificates for each individual Higher Level Exam on which the student scores 5, 6, or 7. The exam credit for individual IB Higher Level certificates is listed in Table 1 below. The University does not grant credit for Standard Level exams. Credit for International Baccalaureate Exams Course exemptions through International Baccalaureate exams are available by request, and will be granted for accomplishments comparable to those listed on the AP exemption table. Only scores of 5 or higher will be considered for course exemption. Duplicate credit for Advanced Placement exams will not be given for IB exams. Requests may be directed to the Student Advising and Learning Center (SALC) on the first floor of the Kolligian Library.

TABLE 1: CREDIT FOR IB EXAMS

IB Subject Group	Exam Area	UC Semester Units
Languages A1 (native)	English A1, French A1, etc.	5.3
Second Languages A2, B	English A2, English B, French A2, French B, etc.	5.3
Individuals and Societies	Economics, Geography, History, History of the Islamic World, Philosophy, Psychology, Social and Cultural Anthropology	5.3
Experimental Sciences	Biology, Chemistry, Physics	5.3
Mathematics	Mathematics Higher Level, Computer Science	5.3
Arts	Visual Arts, Dance, Film, Music, Theater Arts	5.3

CREDIT FOR AP EXAMS

UC Merced grants elective or subject credit for all College Board AP examinations on which a student scores 3 or better. Prior to enrolling in their first classes at UC Merced, students will meet with an academic advisor to discuss their academic plans and test scores. A score of 3 on any exam (except Calculus BC), may earn a student a maximum of 5.3 UC Merced Elective semester units. If a student decides to take a course they are otherwise exempted from, they will receive the 5.3 UC Merced Elective semester units, not the units for the specific exempted course. See Table 2 below for information about subject credit for AP examinations.

TABLE 2: CREDIT FOR AP EXAMS

AP Test	UCM Recommendations
Art (Studio)	4 or 5 on Drawing, 2-D Design or 3-D Design exempts one 4-unit GE course on ARTS
Drawing	
2-D Design	
3-D design	
Art History	4 or 5 on Art History exempts one 4-unit GE course on ARTS
Biology	4 or 5 on Biology exempts BIS 1
Chemistry	4 or 5 on Chemistry exempts CHEM 2; 3, 4 or 5 exempts student from taking UCM Chemistry Readiness examples and the company of
Computer Science	
Comp Sci A	4 or 5 on Computer Science A: 1.3-units
Comp Sci AB	4 or 5 on Computer Science AB: 2.7-units; (2.7 unit maximum for both tests)
Economics	4 or 5 on Microeconomics AND Macroeconomics exempts ECON 1; 4 or 5 on
Macroeconomics	only one of the exams earns student 5.3 semester units of Elective credit
Microeconomics	
English	4 or 5 on English Language exempts WRI 10; 4 or 5 on English Literature
Language and Composition	exempts LIT 20-21, 30-31 or 40-41 sequence
Literature and Composition	
Environmental Science	4 or 5 on Environmental Sciences exempts ESS 1
Government and Politics	4 or 5 on US Govt. or Comparative Govt. exempts POLI 1; 4 or 5 on both exams
United States	exempts only POLI 1 and earns student additional 5.3 semester units of Elective credit
Comparative	
History	4 or 5 on US History exempts HIST 16-17; 4 or 5 on World History exempts
US History	HIST 10-11; 4 or 5 on European History earns 5.3 semester units of Elective credit
European History	, , , , , , , , , , , , , , , , , , , ,
World History	
Human Geography	4 or 5 earns 2.7 semester units of Elective Credit
Language Other than English:	4 or 5 on Spanish Literature exempts LIT 50-51; 4 or 5 on French Literature,
French Language	French Language, and/or German Language exempts students from WCH
French Literature	foreign language requirement; 4 or 5 on Spanish Language exempts SPAN 4
German Language	and/or WCH Foreign Language requirement.
Spanish Language	
Spanish Literature	
Latin	4 or 5 on Latin Literature or Virgil exempts students from WCH Foreign Language Requirement;
Latin Literature	4 or 5 on both exams exempts only Foreign Language Requirement and earns student additional
Virgil	2.7 semester units of Elective credit
Mathematics	4 or 5 on Calculus AB exempts MATH 21; 4 or 5 on Calculus BC exempts MATH 21 and MATH 22;
Calculus AB	3 on Calculus BC exempts UCM Calculus readiness exam and MATH 21; 4 or 5 on either exam exempts
Calculus BC	UCM readiness exam; 4 or 5 on either meets SSHA's Quantitative Reasoning Requirement
Music Theory	4 or 5 earns 5.3 semester units of Elective Credit
Physics	4 or 5 on Physics B earns 5.3 semester units of Elective credit; 5 on Physics C-Mechanics exempts PHYS 8;
Physics B	4 on Physics C-Mechanics earns 2.7 semester units of Elective credit;
Physics C Mechanics	4 or 5 on Physics C-E&M earns 2.7 semester units of Elective credit
Physics C (E & M)	1. 5. 5 5. Thysics & Earli Carris 2.7 Schiester and or Elective Clear
Psychology	4 or 5 on Psychology exempts PSYCH 1
,	1. S. S. S. Sychology exemple 151 cm

ADMISSION AS A TRANSFER STUDENT

If you have enrolled in a regular session of college or university-level course work after leaving high school, you are considered to be a transfer student and cannot ignore your college records to apply as a freshman. UC Merced has a strong commitment to enrolling well-prepared transfer students. Following California's Master Plan for Higher Education, UC Merced will give highest priority to students transferring from California's community colleges. UC Merced will give priority to junior-level transfer students – students who have completed at least 60 and no more than 89 transferable semester units (90 to 133.5 guarter units). While preparing to transfer at the junior level, we encourage you to complete a pattern of courses that will best prepare you for upper division work in your chosen field of study. It is helpful if you identify an intended major early in your college course work. Contact ARSC for assistance in planning to transfer. Information about UC Merced majors and transfer preparation is available at http://students.ucmerced.edu. If you plan to transfer from a California community college, contact Admissions/Relations with Schools and Colleges to inquire about Transfer Admission Guarantee contracts or visit www.assist.org.

TRANSFERABLE COLLEGE UNITS AND GRADE POINT AVERAGE (GPA)

The University awards transfer credit for courses that are determined by the Admissions/Relations with Schools and Colleges to be essentially the same as those offered for the undergraduate degree at any UC campus, and taken at a regionally accredited institution of higher education. Transferable courses offered by California Community Colleges are listed on the UC Transferable Courses section of the California public institution articulation database, found on the website at www.assist.org.

Grade points for all UC-transferable courses attempted on a letter grade basis will be computed into the grade point average (GPA) that will be used to determine admission. Units for courses in which you earned grades of W, Pass or Credit, and No Pass or No Credit, are excluded from the computation of your grade point average. Honors courses taken in college are not weighted when computing the transferable GPA for admission. For more information about determining your GPA, contact ARSC or visit the website: http://students.ucmerced.edu.

If you have attended only community colleges or two-year postsecondary institutions, all of your UC-transferable college courses will be accepted in transfer for subject credit and your GPA for admission is computed using all UC-transferable college courses attempted. When you transfer, however, the total number of units is limited to a maximum total of 70 semester units (105 quarter units).

EXCESS UNITS

Students transferring to UC Merced from a regionally accredited four-year college or university may have up to 89 transferable semester (133.5 quarter) units and still be eligible to transfer. It is important to note, however, that UC Merced considers students who have completed more than 89 semester units to have excess units, and will not admit those students without special approval. A student who completed 89 or fewer units at a four-year institution, then transfers to a community college to complete course work that is necessary for admission, will not have excess units and can be considered for admission to UC Merced.

ADMISSION ELIGIBILITY FOR TRANSFERS

California Residents

There are three ways for you to meet the University's minimum eligibility requirements for transfer admission. Meeting the minimum eligibility requirements does not guarantee admission.

- 1. Eligible for admission upon high school graduation: If you were eligible for admission to the University when you graduated from high school meaning you satisfied the Subject, Scholarship and Examination requirements you are eligible to transfer if you have a C (2.0) grade point average in your transferable college course work.
- 2. Lacking in subject requirements upon high school graduation: If you met the scholarship and examination requirements but you did not satisfy the subject requirements when you graduated from high school, you must take transferable college courses in the subjects you are missing, earn a grade of C or better in each of these required courses, and earn an overall C (2.0) average in all transferable college course work to be eligible to transfer.
- 3. Lacking in scholarship requirement upon high school graduation: If you were not eligible for admission to the University when you graduated from high school because you did not meet the scholarship and examination requirement, you must complete all of the following in (a) and (b) below. Any student planning to enter UC Merced as a junior-level transfer student may complete the following requirements in place of (1) or (2) above
 - (a) 60 semester units (90 quarter units) of UC-transferable college course work with a grade point average of at least 2.4, and
 - (b) A course pattern requirement to include:
 - Two transferable college courses (3 semester or 4-5 quarter units each) in English composition, and
 - One transferable college course (3 semester or 4-5 quarter units) in mathematical concepts and quantitative reasoning, and
 - Four transferable college courses (3 semester or 4-5 quarter units each) chosen from at least two of the following subject areas:
 - Arts and humanities
 - Behavioral and social sciences
 - Physical and biological sciences

Students who have completed courses listed on the Intersegmental General Education Transfer Curriculum (IGETC) before they transfer to the University will have already satisfied the course pattern requirement.

TRANSFER REQUIREMENTS FOR NONRESIDENTS

Transfer students who are not residents of California must meet the same requirements as California residents and must have a grade point average (GPA) of 2.8 or better in all transferable college work.

MINIMIM ELIGIBILITY VS. SELECTION: TRANSFER APPLICANTS

If the number of transfer applicants exceeds the number of transfer enrollment spaces available, UC Merced may use supplemental criteria to select from among the qualified transfer applicants. Highest-priority consideration is given to students transferring from a California Community College who meet the University's definition of a California Community College student.

Definition of a California Community College student: A California Community College student applying for admission to the University of California in advanced standing will be given priority admission over all other applicants if: 1) he/she was enrolled at one or more California Community Colleges for at least two terms (excluding summer sessions); 2) the last college he/she attended before admission to a UC campus was a California Community College (excluding summer sessions); and 3) he/she has completed at least 30 semester (45 quarter) UC transferable units at one or more California Community Colleges.

SELECTION CRITERIA FOR TRANSFER APPLICANTS:

- Completion of a specified pattern or number of courses that meet breadth or general education requirements.
- Completion of a specified pattern or number of courses that provide continuity with upper division courses in your major.
- Your grade point average in all transferable courses.
- Participation in academically selective honors courses or programs.
- Special talents, achievements and awards in a particular field, such as visual and performing arts, communication or athletic endeavors; special skills, such as demonstrated written and oral proficiency in other languages; special interests, such as intensive study and exploration of other cultures; experiences that demonstrate unusual promise for leadership, such as significant community service or significant participation in student government; or other significant experiences or achievements that demonstrate your promise for contributing to the intellectual vitality of the campus.
- Completion of special projects undertaken in the context of your college curriculum or in conjunction with special school events, projects or programs.

- Academic accomplishments in light of your life experiences and special circumstances.
- Location of your college and residence.

IGETC NOTES FOR CALIFORNIA COMMUNITY COLLEGE TRANSFERS

If you complete the Intersegmental General Education Transfer Curriculum (IGETC) prior to transfer, the campus-specific, lower-division general education requirements for graduation from UC Merced will be waived. Official certification of your completed IGETC must be sent to Admissions/Relations with Schools and Colleges at UC Merced, along with your final, official transcript, from the last community college you attended.

UC INTERCAMPUS TRANSFERS

If you are already enrolled at a University of California campus as a degree-seeking student, you may apply to UC Merced as a transfer student. Intercampus transfers follow the same procedures and deadlines as transfers from other colleges and universities. If you complete the general education or breadth requirements for your UC school or college prior to transfer and obtain a letter from the dean declaring your requirements satisfied, UC Merced will use your letter to waive campus-specific, lower-division general education requirements at Merced.

TRANSFER ADMISSION PROGRAMS

Concurrent Enrollment Program (CAP): Admissions/Relations with Schools and Colleges (ARSC) coordinates the Concurrent Enrollment Program that identifies potential participants at specified local-area high schools for simultaneous admission to UC Merced and one of the following community colleges at the point of high school graduation: Fresno City College, Merced College and Modesto Junior College. Participants in CAP are advised on a frequent basis and invited to participate in special activities designed to motivate them for transfer. CAP students are guaranteed transfer to UC Merced when they meet specified criteria. Interested high school seniors may contact ARSC at (209) 381-7880 or (866) 270-7301 toll-free in California.



Admissions/Relations with Schools and Colleges Director Encarnación Ruíz welcomes students to Bobcat Day.

TRANSFER ADMISSION GUARANTEE (TAG)

UC Merced offers Transfer Admission Guarantee (TAG) contracts for California Community College students throughout California. TAG contracts specify the courses to be completed and grade point averages students must earn at the community college to be guaranteed admission to their major. If you are interested in receiving a TAG contract, call ARSC at (209) 381-7880 or (866) 270-7301 toll free in California. The following majors are available for fall 2006 and 2007 TAG contracts:

Required GPA	Major, Degree
2.80	Computer Science & Engineering, B.S.
2.80	Environmental Engineering, B.S.
2.80	Biological Sciences, B.S.
2.80	Earth Systems Science, B.S.
2.80	Human Biology, B.A.
2.80	Social and Cognitive Sciences, B.A.
2.80	World Cultures and History, B.A.

ADMISSIONS INFORMATION FOR INTERNATIONAL STUDENTS

International students who plan to enter UC Merced as freshmen must have completed a rigorous program of studies and activities comparable to that required of domestic freshman applicants selected for admission and must demonstrate proficiency in the English language by one of the methods described later in this section. International applicants are also required to take the ACT Assessment Plus Writing test or the SAT Reasoning test and two SAT Subject Tests selected from two of the following subject areas: history, literature, mathematics (Math Level II only), science or a language other than English.

International students enrolled in California Community Colleges and other post-secondary institutions in the United States will be considered for admission according to the same guidelines and requirements as those required of domestic transfer students, except that they must present a grade point average of at least 2.8 for admission consideration.

Courses comparable to those offered for undergraduate degree credit in the University of California and completed in post-secondary institutions outside the United States will transfer to UC Merced if taken at institutions recognized by the Ministry of Education in the institution's home country. International students with previous college attendance cannot disregard their academic records and apply as freshmen.



UC Merced Intern Amanda Rodriguez, helping plan alcohol awareness program.

International students whose native language is not English must demonstrate language proficiency by one of the following methods:

- Take the Test of English as a Foreign Language (TOEFL) and earn a minimum score of 220 (computer-based TOEFL) or 550 (paper-based TOEFL). Information about the TOEFL is available at www.toefl.org.
- Take the International English Language Testing System exam (IELTS) and earn a minimum score of 7.
 Information about IELTS is available at www.ielts.org
- Earn a score of 3, 4 or 5 on the Advanced Placement International English Language (APIEL). Information about the APIEL is available at www.collegeboard.com/ap/students/apiel/
- Earn a score of 560 or higher on the SAT II Writing examination. Information about the SAT II is available at www.collegeboard.com
- Earn grades of B or better in each of two UC-transferable English composition courses taken at a regionally accredited post-secondary institution in the United States.

Prospective international students are strongly encouraged to contact the ARSC to discuss their academic background, English proficiency, and visa status prior to application.

COST OF ATTENDANCE AND FINANCIAL AID

See the Financial Aid section of this catalog for detailed information about the estimated cost of attendance and information regarding financing your education.

ORIENTATION FOR ADMITTED STUDENTS

All admitted students receive an invitation to attend New Student Orientation during summer for fall semester and during January for spring semester. At orientation, students will meet with an academic advisor, plan their program of study and enroll in classes.

CALIFORNIA RESIDENCY STATUS

The admission requirements for California residents also apply to dependents of the University of California employees. The manner in which legal residence is defined for tuition purposes is different than that for admission purposes. If you have questions about your residency status for tuition purposes, contact the Office of the Registrar at registrar@ucmerced.edu.

FINANCIAL AID AND SCHOLARSHIPS

The Office of Financial Aid and Scholarships strives to make a college education affordable for all students regardless of their families' financial situations. While students are expected to contribute a certain amount toward their education, UC Merced offers a number of financial aid and scholarship resources to assist students in meeting their educational expenses. (Exceptions: The Office of Financial Aid and Scholarships does not have funds available to offer assistance to international students, students on special or limited status or students enrolled in the Division of Professional Studies.)

All students, regardless of income, are encouraged to apply for financial aid. Throughout the University of California system, 65 percent of all undergraduate students receive some form of financial assistance. Financial aid is intended both to remove financial barriers for families who cannot afford the cost of a higher education and to fill in the gap for families who can afford only part of the cost. A number of factors in addition to family income are considered in determining your financial eligibility, including the size of your family and the number of family members in college. Although most grant awards are based on financial need, some loans and scholarships are available regardless of need.

The Office of Financial Aid and Scholarships is dedicated to helping students and their parents understand the financial aid opportunities available as well as the criteria used in determining eligibility for the various financial aid programs available at UC Merced. The Office of Financial Aid and Scholarships welcomes your questions and is here to provide services and guidance that will contribute to your educational experiences at UC Merced. If you have questions or need additional information, please do not hesitate to contact us.

Office of Financial Aid and Scholarships:

Website: www.ucmerced.edu/ugmoneymatters

E-mail: finaid@ucmerced.edu
Phone: (209) 724-4384
Address: 5200 N. Lake Road
Merced, CA 95340

Other important Web addresses:

Website: FAFSA: http://www.fafsa.ed.gov Website: CSAC: www.csac.ca.gov

HOW TO APPLY

Students applying for financial aid from UC Merced, the federal government and/or the state of California must complete the Free Application for Federal Student Aid (FAFSA). The 2006-2007 FAFSA will be available beginning in December 2005. For faster and more accurate filing, students can apply for financial aid online at www.fafsa.ed.gov. The FAFSA as well as the Cal Grant

GPA Verification form should be completed and submitted as soon as possible after January 1 and no later than March 2nd. If the March 2nd deadline has already passed, some funding may still be available. Apply as soon as possible! We receive and process financial aid applications throughout the year and students will be considered for Pell Grants and Federal Loans at all times.

A Financial aid advisor is available to assist students and parents with the financial aid application and award process, and can review special circumstances that may affect eligibility. Please contact the Office of Financial Aid and Scholarships for assistance.

Applying for Financial Aid is as easy as 1,2,3!

- Complete and submit the University of California Application for Admissions & Scholarships by November 30th.
- Complete and submit the Free Application for Federal Student Aid (FAFSA) and a GPA Verification form by March 2nd.
- 3. Complete and return any additional documents requested by the Office of Financial Aid and Scholarships.

TYPES OF FINANCIAL AID

Students who receive financial aid may receive funds from one or more of the following sources: scholarships, grants and loans.

SCHOLARSHIPS

Scholarships are awarded on the basis of merit, academic achievement or special talents and do not have to be repaid. Some scholarships are also awarded on the basis of financial need. The University of California, Merced will administer a number of scholarship funds designed to benefit undergraduate students. These scholarships are provided through the generosity of UC alumni, friends of UC Merced, corporations, businesses, professional associations and the university itself. Following is a partial list of scholarships that will be available for undergraduate students:

- Regents Scholarship
- Lucia Myers Endowed Scholarship
- SBC Pacific Bell Scholarship
- Stewart A. Resnick Scholarship
- Wells Fargo Scholarship
- Willer-BUR Scholarship
- Ray and Joan Dezember Scholarship
- Wendy Leone Olsen Scholarship

To be considered for all campus scholarships, students simply fill out the University of California Application for Admissions & Scholarships (for students entering UC Merced for the first time). Student must have a 3.25 cumulative GPA to be considered for a UC Merced scholarship. Students should carefully read the Application for Undergraduate Admission and Scholarships for information about required supporting documentation and deadline dates. To be considered for need-based scholarships, students will also need to complete and submit the Free Application for Federal Student Aid (FAFSA) as discussed above.

GRANTS

Grants are awarded on the basis of financial need and do not have to be repaid. The federal government provides funds for some grants (Federal Pell Grants). The State of California also offers grants to qualified undergraduate students (Cal Grants A and B). In addition, grant funds are provided by the University of California.

Federal Pell Grants: To be eligible for a Federal Pell Grant, applicants must be U.S. citizens or eligible noncitizens, be enrolled as undergraduates, have not previously received a bachelor's degree and demonstrate financial need. The amount you receive depends on your financial need as determined by completing the FAFSA.

Cal Grants: To be eligible for a Cal Grant award, applicants must be California residents, demonstrate financial need and meet appropriate deadlines. The California Student Aid Commission (CSAC) administers the Cal Grant program. Go to the CSAC website at http://www.csac.ca.gov for more information.

Cal Grant A awards are based on financial need and academic achievement. This grant pays the majority of University fees.

Cal Grant B awards are based on financial need and are for entering undergraduate students, primarily from low-income backgrounds. Cal Grant B pays a stipend each semester for living expenses for first-year students, and the majority of University fees plus a stipend each semester for living expenses for students in their second through fourth years.

University Grants: The University offers an institutional grant program to eligible students. To determine eligibility, we subtract a student and parent contribution, any federal or state resources the student receives and a standard work and loan contribution from the cost of attendance.



LOANS

Loans are financial aid awards that require repayment. They offer the opportunity to defer the cost of your educational expenses by borrowing now and repaying later. Some loan programs are based on financial need, but there are loan programs available to all students regardless of income. Loan programs available through UC Merced are federally funded, providing long-term, low-interest loans.

Federal Subsidized Stafford Loans are awarded to students with financial need. This loan is "subsidized" in that the U.S. government pays the interest while the student is in school and during the grace period (the first six months after leaving school or dropping to less than half-time enrollment status). Federal Unsubsidized Stafford Loans are not based on financial need and are available to all eligible students, regardless of income. This loan is "unsubsidized" in that the student is responsible for paying all interest due. There is no federal interest subsidy for the loan. Interest accrues immediately upon disbursement. Borrowers may elect to pay accrued interest on a monthly or quarterly basis or have it added back to the principal balance in a process called capitalization.

ELIGIBILITY REQUIREMENTS

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

FULL-TIME ENROLLMENT AND SATISFACTORY PROGRESS

Students not enrolled full time by the end of the third week of the semester may have to pay back some of their financial aid. Federal regulations require that financial aid recipients meet the published Standards for Satisfactory Academic Progress for Financial Aid concerning units, grade point average and maximum semesters of attendance allowed to obtain a degree.

Chancellor Carol Tomlinson-Keasey accepts a gift in support of student scholarships from the Wells Fargo Bank.

LIMITED NUMBER OF SEMESTERS

Financial aid is not available for an indefinite period. You are allowed up to 10 semesters of financial aid eligibility, depending on your class standing when you were admitted. The semester limit applies to time you have spent at any college or post-secondary institution; it includes semesters during which you received no financial aid, as well as terms during which you withdrew. It does not include semesters when you were not registered or summer sessions. The initial class level is assigned by the Office of Admissions and Relations with Schools and Colleges and it is based on transfer credits accepted, including Advanced Placement units. Note: Terms that you withdraw count toward the total number of semesters.

Student's Status	Financial Aid Eligibility at UC Merced
Entering freshman	10 semesters
Entering sophomore	8 semesters
Entering junior	6 semesters
Entering senior	4 semesters

MINIMUM NUMBER OF UNITS EACH YEAR

You must accumulate a certain number of units by the end of each year to remain eligible for financial aid. If you fail to complete sufficient units, you will receive a warning letter. If you do not complete the minimum unit level within a year after being sent a warning, you are no longer eligible for financial aid. The chart below shows the number of units you must have completed by the end of each academic year at UC Merced to maintain your eligibility.

Academic Year	Normal Progress	Subject to Probation	Subject to Disqualification
1	27-30	<27	N/A
2	54-60	52-53	<52
3	81-90	79-80	<80
4	108-120	106-107	<106

Dropped, failed and incomplete courses; remedial courses for which no credit is received; and repeated courses (in which you previously received a passing grade) do not count toward unit credit. To earn units for a course, you must complete and pass that course. Units are measured and warning letters are mailed at the end of the spring semester.

SATISFACTORY ACADEMIC PROGRESS

An undergraduate student will be placed on academic probation if at the end of any term the student's grade point average:

is less than 2.0, but not less than 1.5, for the term;

or

is less than 2.0 for all courses taken within the University of California.

An undergraduate student is subject to academic disqualification for further registration in the University if at the end of any term:

the student's grade point average for that term is less than 1.5;

or

if the student has completed two consecutive terms on academic probation without achieving a cumulative grade point average of 2.0.

You may receive financial aid while you are on probation, but you will lose all financial aid if you are dismissed (unless dismissal is waived).

APPEALS

If your financial aid is denied, suspended or terminated for failure to achieve satisfactory academic progress, you may appeal if extenuating circumstances hindered academic performance. Appeal forms are available from the Office of Financial Aid and Scholarships. To file an

appeal, complete the form, obtain and attach all documents that support the basis for your appeal, and return the form and documentation to the Office of Financial Aid and Scholarships. You are strongly encouraged to file your appeal form immediately after receiving notification that your aid has been denied. You are not eligible to receive financial aid while your appeal is under consideration, and the appeal process normally takes 2-4 weeks.

EFFECTS OF WITHDRAWING ON FINANCIAL AID

Students sometimes find that they need to withdraw from school. This may be owing to illness or a family emergency. If you leave school after the term begins, this is considered a withdrawal. (If you cancel your registration for a term before the term begins, you are not eligible to receive any financial aid for that term.) Whatever the reason, if you are considering withdrawal, you should first discuss your decision with a financial aid advisor. Financial aid recipients who withdraw may no longer be eligible for all of the financial aid they have received. If you are a financial aid recipient and withdraw, you should expect to pay back part of your financial aid. UC Merced uses the Federal Formula required for Title IV aid recipients (Pell Grants, FFELP, Parent Loans for Undergraduate Students) to determine the amount of all forms of aid a student must return, including Cal Grants and scholarships.

The percentage of aid to be repaid is the percentage of the total days in the semester that are remaining after the date of withdrawal. For instance, if you received \$2,000 in financial aid and withdraw when the semester is exactly 50 percent over, you will need to repay \$1,000.

IMPORTANT WARNING: Your semesters of financial aid eligibility are limited. When you withdraw you use up one semester of eligibility!

FOR ADDITIONAL INFORMATION:

Please refer to the Money Matters website (www.ucmerced.edu/ugmoneymatters) for additional information and assistance.

THE ACADEMIC YEAR

THE SEMESTER SYSTEM

The University of California, Merced is on the semester system. The academic year is divided into two semesters and two summer sessions. Quarter units earned previously at another institution are converted to semester units by multiplying by two-thirds; for example, 180 quarter units equals 120 semester units.

SUMMER COURSES

Every summer, students can earn units, expand their knowledge, take special study courses, fulfill prerequisites and complete general education or major requirements by enrolling in summer courses. UC Merced offers two summer sessions. A wide variety of courses are offered each summer in subjects that are transferable to most campuses. Enrollment in summer session courses is open to UC Merced students and other UC students, as well as students from other colleges and universities, adults and high school juniors and seniors. For additional information about summer courses, contact summersession@ucmerced.edu.

Office of the Registrar

Website: http://registrar.ucmerced.edu/ E-mail: registrar@ucmerced.edu

Phone: (209) 724-2960 Address: 5200 N. Lake Road

Merced, CA 95340

ENROLLMENT AND ENROLLMENT LIMITS

ENROLLING IN COURSES

UC Merced students register each semester using the online registration system, MyUCMerced. The registration process includes enrolling in classes, paying fees and other financial obligations, filing a current address with the Office of the Registrar, and completing and filing other information forms. MyUCMerced is an interactive computer system that allows the student to enroll in classes via the Internet. With UC Merced's Internet registration, students will always receive the most up-to-date information regarding their registration and class enrollment. Pre-assigned appointments that are spread throughout the registration period regulate access to the registration system. For security purposes, students are assigned a unique login user code and password/PIN that must be entered to access MyUCMerced. Students may add and drop courses during the adjustment period, which starts one week before instruction and extends through the first three weeks of instruction. A new or re-entering student must also:

- Obtain a student ID card, and
- Submit a Statement of Legal Residence (see Appendix).

The Schedule of Classes and other information on registration are available on the MyUCMerced website.



Registration Priority: Access to registration (via MyUCMerced) is by priority groups. The groups are established according to student class level as determined by the number of units completed, with the seniors registering first, juniors second, etc. The number of semester units a student has completed determines undergraduate classification:

Class Level	Units
Freshman	0.0–29.9
Sophomore	30.0–59.9
Junior	60.0–89.9
Senior	90.0 or more

Late Registration

Students who have not registered prior to the first day of instruction are considered late registrants. Late registration begins after the first day of instruction and extends through the 10th day of instruction. Students are, however, assessed a late registration fee. Approval from the student's school is required to register late.

Adding and Dropping Courses

Adding a Course: During the first week of instruction, students may add a course or courses if space is available. During the second and third weeks of instruction, a student may add courses only with the permission of the instructor. After the third week of instruction, students may add a class only with the permission of both the instructor and the appropriate dean. A fee will be assessed for adding a course after the third week.

- First week: Students may add if space available
- Second and third weeks: Students may add only with instructor's approval
- After third week: Students may add only with instructor's and appropriate dean's approvals; fee assessed

Dropping a Course: During the first three weeks of instruction, students may drop a class or classes without paying a fee and without a dean's approval. After the third week of instruction, a student may drop only if the student is not failing the course, if the student is not subject to disqualification and if dropping the course would be to the educational benefit of the student. For courses dropped after the third week of instruction, a student must receive the appropriate dean's approval, a fee will be assessed and a notation indicating the week of the term in which the course was dropped will appear on the student's transcript. The Undergraduate Council may designate certain courses to have a drop date that is shorter than three weeks.

- First through third week: Students may drop with no penalty
- After third week: Students may drop only with the appropriate dean's approval; fee assessed

Course Substitutions

Students may petition the appropriate dean to substitute a suitable course in place of a required course (for a general education course: petition the Dean of College One; for a major course: petition the dean of the School in which the major resides). Petition forms are available on the following websites: Office of the Registrar, the Student Advising & Learning Center, College One, and Schools.

Retroactive Add

In some rare circumstances, students are allowed to add a course after the course is completed. Petitions for retroactive adds are available from the Office of the Registrar. Each petition must include the reason for the student's failure to add the course during the semester in which it is offered. The petition must be supported by the instructor's signed approval, together with a statement from the instructor indicating knowledge of the student's participation and performance during the presentation of the course in question and the instructor's understanding as to the reason for the student's failure to add the course before the end of the semester. Once the petition is complete, it should be forwarded to the appropriate school dean for review and approval. A course grade must be assigned by the instructor. A fee is applicable on all retroactive adds.

Retroactive Drop

Occasionally, in exceptional circumstances, students are allowed to drop a course after the course is completed. Reasons for seeking a retroactive drop are very specific: medical problems, severe emotional difficulties, or recent death or severe illness in the immediate family. Petitions are available from the Office of the Registrar and should include a detailed account of the problem, appropriate documentation and an adequate explanation of why an I grade or late drop was not taken during the semester in which the problem occurred. The instruc-

tor's signature is required on the petition. Once the petition is complete, it should be forwarded to the appropriate school dean for review and approval. A fee is applicable on all retroactive drops.

Repetition of Courses

A student may repeat only those courses in which a grade of D, F, U, or Not Passed was received.

Undergraduate courses in which a grade of D or F has been earned may not be repeated on a passed/not passed basis. Similarly, a graduate course in which a C, D or F grade is received may not be repeated with the S/U option. 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, but the grade assigned at each enrollment shall be permanently recorded.



In computing the grade point average of an undergraduate who repeats courses in which the student received a D or F, only the most recently earned grade and grade points shall be used for the first 16 units repeated. In the case of further repetitions, the grade point average shall be based on all grades assigned and total units attempted.

Enrollment StatusCertification of Full-Time Status

Undergraduate students must carry a study load of at least 15 units (including workload units) each semester in order to maintain normal progress toward their degree. At least 12 units are required for undergraduates to be certified as full-time students for financial aid purposes and to meet minimum progress requirements. Graduate students must also carry a study load of at least 12 units each semester in order to be certified as full-time students.

Part-Time Student Status

If, for reasons of occupation, family responsibility, health or graduating senior status (one term only), a student is unable to attend the university on a full-time basis, he/she may qualify for enrollment in part-time status. The student must file for part-time status each semester. To be considered eligible, undergraduate students must be registered for 10 units (including workload units) or fewer by the 10th day of instruction that semester, and graduate students must be registered in 6 units or fewer by the 10th day of instruction. Minimum progress requirements are waived for approved part-time students. Undergraduate petitions are available on the Office of the Registrar's website at registrar.ucmerced.edu, and at the Graduate Studies website at graduatedivision.ucmerced.edu. Students approved for enrollment on a part-time basis pay the same fees as full-time students, but pay only one-half of the Educational Fee. Part-time nonresidents pay one-half of the Nonresident Tuition Fee. Undergraduates file their part-time petition with the Office of the Registrar; graduate students file their petition with the Graduate Studies division.

Natural Sciences Professor Anne Kelley at work in her lab.

Planned Educational Leave Program (PELP)

The Planned Educational Leave Program (PELP) allows students to suspend academic work at UC Merced, leave the campus and later resume studies at UC Merced with a minimum of procedural difficulties. Any registered student on the UC Merced campus, undergraduate or graduate, is eligible to enroll in the Planned Educational Leave Program, although restrictions may be imposed on the number of times a student can participate in the program. Undergraduates apply for PELP at the Office of the Registrar and graduate students apply through the Graduate Studies division. Applications for PELP must be filed no later than the tenth day of instruction, but must be filed by the first day of instruction for a full refund. After filing the PELP form, a student must file an exit form with Student Accounting.

An application fee will be charged to the student's account when he/she enrolls in the PELP program. This fee is identical to that paid by a student who withdraws and the student is required to pay a readmission fee upon return.

The minimum Planned Educational Leave is one full semester; the maximum leave is one full academic year. Applications for PELP should be filed no later than the first day of instruction. While approved applications can be accepted as late as the tenth day of instruction, filing after the first day of instruction will entitle the student to only a partial refund of fees paid, in accordance with the Schedule of Refunds. The Schedule of Refunds refers to calendar days beginning with the first day of instruction. The effective date for determining a refund of fees is the date the completed and approved PELP form is returned to the Office of the Registrar.

While students may receive academic credit at other institutions and transfer this credit to UC Merced (subject to rules concerning transfer credit), participants are reminded that the intent of the program is to "suspend academic work." Therefore, students should carefully evaluate the desirability of taking academic work while away from the campus during PELP. Students enrolled in PELP are not eligible to enroll in concurrent courses at the UC Merced campus or to earn academic credit at UC Merced during the PELP leave.

Readmission is guaranteed assuming students resume regular academic work at the agreed-upon date and satisfy any hold that may have been placed on their registration. Students who do not return at the agreed-upon date and who do not officially extend their leave will be automatically withdrawn from the University.

Grants and other financial aid will be discontinued for the period of the leave, but every effort will be made, where legally possible, to allow the student to renegotiate loan payment schedules and to ensure the availability of financial aid upon their return.

Normal Progress to Degree

UC Merced undergraduate degree programs are designed to be completed in eight terms or four academic years. To meet the normal progress requirement, undergraduate students are expected to enroll in and pass an average of 15 units per term, completing the 120 units necessary for graduation in four years. The Office of the Registrar and the appropriate dean will ensure that students are making normal progress toward their degrees. An extension of enrollment beyond nine terms requires the approval of the student's



The Sierra Nevada, living up to its snowy name.

school. In order to remain in good standing, students must meet the minimum progress requirements of the campus. (See Minimum Progress section of catalog.)

Planning for a Major

The decision on the choice of a major is a very important one and should be made on the basis of a student's interests and abilities as well as his or her career goals. Students should look carefully into the programs available by using this catalog and visiting schools in which they are interested.

Students are encouraged to declare a major as soon as possible and should begin thinking about possible majors in their first year at UC Merced. Some majors require a full four years to complete. Since students are expected to be accepted into a major by the time they have completed 60 units, the lower division major requirements should be planned into the student's program for the first two years.

Declaration and Change of Major

In order to declare or change a major, a student must fill out a Change of Major petition and have it approved by the dean or other authorized person in the school to which he or she is declaring or transferring and submit it to the Registrar's Office. This form is available on the Office of the Registrar's website. Admission into a major program may be denied or deferred if the student is in academic difficulty or has a grade point average (GPA) of less than 2.0 in courses required for the selected major.

Except under unusual circumstances, no change of major will be permitted after a student has attained senior standing (90 units). It is not possible to change or declare a major in the semester in which a student has filed to graduate.

Double Majors

A student wishing to declare a double major must petition the school(s) responsible for the major(s). The student must be in good academic standing and have a GPA of at least 2.0 in the upper division courses taken toward each major program. Except under unusual circumstances, no declaration of a double major will be permitted after a student has attained senior standing (90 units). Double-major students must satisfy all requirements for both majors.

ADDITIONAL ENROLLMENT OPPORTUNITIES

Intercampus Transfer: Undergraduates may apply for transfer to another University of California campus. Copies of the Application for Undergraduate Admission are available from the Office of Admissions & Relations with Schools & Colleges and must be filed with the University of California Undergraduate Application Processing Service, P.O. Box 4010, Concord, CA 94524-4010.

The application is also available online at UC's PATHWAYS website at www.ucop.edu/pathways. Students may apply online or download a copy of the application to mail to the postal address above. Students who are or have been enrolled in a regular UC Merced semester may apply for an intercampus transfer to another UC campus, provided they have not been registered subsequently in a regular term at another collegiate institution. A nonrefundable fee is required at the time an application is submitted.

Intercampus Visitor (ICV): The ICV Program allows qualified undergraduate students at UCM to take advantage of educational opportunities at other UC campuses. This program enables students who are currently in good standing; have completed at least one year in residence on their home campus and have maintained a grade point average of at least 2.0 for work completed; and obtained approval from the Dean of their school to take courses that are not available at their home campus, to participate in special programs or study with a distinguished faculty member at another campus for one term. Students who meet the above requirements should complete an application available in the Office of the Registrar.

UC/CSU/Community College Intersegmental Cross Enrollment:

Interested students who wish to take a particular class at a nearby California State University or community college, may do so through the Intersegmental Cross Enrollment program. Enrollment is limited to one course per term and participating students need the approval of both the home and the host campus. (Please note that the Los Rios Community College district is NOT participating in the program).

Senate Bill 361 requires that UC, CSU, and the California Community Colleges permit students to enroll in one course per term at a campus of either of the other two systems on a space available basis at the discretion of the two campuses involved. This program aims to encourage community college students to enroll concurrently in courses offered at local universities, potentially increasing the number of community college transfers.

To participate, students must have completed at least one term at the home campus as a matriculated student; be enrolled in at least twelve semester units at the home campus during the term in which they seek to cross-enroll; have a grade-point average of 2.0 for work completed; be in good academic standing; have paid tuition and fees required by the home campus for the academic term in which they seek to cross-enroll; and be certified by their home campus as to eligibility, residence, fee, financial aid and health status.

Generally, students will be allowed to add a class, if space is available, after the add/drop period on the host campus. To add a course, students must obtain the faculty member's approval and signature on a Cross-Enrollment form, available at their home campus Registrar's Office. The student takes the signed form to the Office of the Registrar at the host campus for processing. All course work taken via the Intersegmental Cross Enrollment program is recorded on a host campus transcript and must follow the normal transfer of credit procedures at the home campus.

Simultaneous Enrollment: UC students (undergraduate) 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. Qualifications for this program include: have completed a minimum of 12 units as a matriculated student at the home campus (this requirement can be waived at the discretion of the Dean of the appropriate school); be enrolled at both campuses in the current term with a minimum of 12 units as a matriculated student at the home campus; be in good academic standing; and be certified by their home campus as to eligibility, residence, fee, financial aid and health status. To participate in this program please see the Office of the Registrar's website for form(s) that must be filled out by appropriate authorities on both campuses and to be sure that the application of a non-home UC course will or will not satisfy degree, graduation, major, GE, or other specific requirements (other than unit credit). Failure to ensure the applicability of the nonhome UC course to UC Merced requirements could result in a refusal to allow the course to satisfy any specific requirements (other than unit requirements).

Intercampus Exchange Program for Graduate Students

A graduate student registered on the UC Merced campus may become an intercampus exchange student for a full term at any of the other UC campuses with the approval of the graduate advisor, the director of the graduate group and the deans of Graduate Studies on both the home and host campuses. To be eligible, the graduate student must have attended UC Merced for a minimum of one term before participating in the intercampus exchange program. Students are limited to a maximum of two consecutive semester-based terms or three quarter-based terms on intercampus exchange. Permission for exchange is done on a semester-by-semester basis. Application forms may be obtained in the Office of Graduate Studies and should be submitted four weeks in advance of the semester you wish to participate.

Intercampus exchange students register at both campuses and pay fees on their home campus, but they have access to student services available on the host campus. Students should make arrangements with the Office of the Registrar to follow the enrollment procedure of the host campus so that the grades students obtain in courses taken on the host campus will be transferred to records on their home campus. Grades from courses completed on the host campus will be transferred to the home campus and become part of the student's official graduate transcript. Exchange students are considered graduate students in residence on the home campus and are not formally admitted to the host graduate school and department. For further information, contact Graduate Studies and the Office of the Registrar.

Concurrent Credit from Another Institution: With the exception of current registered students participating in the UC/CSU/Community College Intersegmental Cross-Enrollment Program, a student may not obtain transfer credit for courses at a non-University of California campus in a term during which the student is registered as a full-time student at UC Merced. An exception can be obtained only by petitioning the appropriate school dean well in advance of the desired registration, and the student must still be enrolled in at least 12 units at the UC Merced campus during the term in which the exception applies.

EXAMINATIONS

Midterm Examinations

The number of midterm examinations varies at the discretion of the instructor. In undergraduate courses for which a midterm examination is required, each student has the right to take the midterm (or submit the takehome examination as required by the instructor) during one of the regularly scheduled meetings of the class as defined in the Class Schedule. The scheduling of a midterm examination at a time other than a regularly scheduled class meeting requires mutual consent of the instructor and each student registered in the course. A student who does not consent in writing to the different time must be permitted to take the examination (or submit the takehome examination) at the officially scheduled time. A student who consents in writing to the change of examination time waives the right to take the midterm at the officially scheduled time.

FINAL EXAMINATIONS

Scheduling: The Schedule of Classes lists the times that final examinations are to be held. These are set up according to the day-and-hour periods in which the classes are given during the semester. This information is available online or in the Schedule of Classes each term so that students can avoid final examination conflicts. A student who has multiple exams on the same day may discuss the situation with the instructors of the course. An instructor has the option to agree to provide the student the exam on a different day, but is not required to do so.

Disabilities: Students with documented disabilities may be entitled to in-class accommodations. The student must provide the instructor with a letter from the Disability Services Center recommending those academic accommodations that the instructor is responsible for providing. Students must request accommodation as soon as possible to allow the university reasonable time to evaluate the request and offer necessary adjustments. No accommodations shall alter the nature of the academic demands made of the student nor decrease the standards and types of academic performance, nor require facilities or personnel that cannot reasonably be provided. The instructor should consult with the student and the Disability Services Center with any questions or concerns

Religious Observances: UC Merced seeks to accommodate any student who, in observance of a religious creed, encounters an unavoidable conflict with an examination schedule. In order to request accommodation, the student is responsible for providing, in writing and at the beginning of the semester, notification of a potential conflict to the individual responsible for administering the examination. Instructors will consider such requests on a case-by-case basis and determine whether such conflicts can be resolved without imposing on the instructor or the other students in the class an undue hardship that cannot be reasonably avoided. If so, the instructor will determine, in consultation with the student, a time during which the student can take the examination without incurring a penalty or violation of the student's religious creed.

Credit by Examination: Students currently registered in any regular term and in good academic standing who by reason of advance preparation believe themselves to be adequately grounded in the materials and principles of a given course may petition for credit by examination for any course offered at UC Merced without formally enrolling in that course. Students may

obtain a petition and a copy of the prescribed conditions from the Office of the Registrar's website at registrar.ucmerced.edu.

The petition is subject to the approval of the instructor giving the examination and the dean of the school involved. Once the petition has the signed approvals of the appropriate dean, it should be submitted to the Office of the Registrar, accompanied by the mandatory fee.

Owing to special features of the instruction, such as extensive laboratory work, certain courses may not be considered appropriate for obtaining credit by examination. In addition, credit by examination will not be approved in the following circumstances: (1) for a student who has had prior instruction in the topic, (2) for the purpose of repeating a course, (3) for courses in subjects in which the student has completed more advanced work, (4) for elementary and intermediate courses in a student's native language, or (5) for granting credit for a course which the student has attended and audited.

To earn credit through the credit by examination process, the examination must be given by a UC Merced instructor and be for a course listed in the current General Catalog. The final results will be reported to the Office of the Registrar, who will record the appropriate grade and grade points. Since failure to pass the examination will be recorded as an F, students are encouraged to prepare fully for such an examination before attempting it.

Grades, Progress to Degree and Dismissal

Grades: The work of all students on the UC Merced campus is reported in terms of the following grades:

- **A** (excellent)
- **B** (good)
- C (fair)
- **D** (barely passing)
- **F** (not passing)
- **P** (passed at a minimum level of C- or better by an undergraduate student)
- **S** (satisfactory passed at a minimum level of B or better by a graduate student)
- **NP** (not passed)
- **U** (unsatisfactory)
- I (incomplete)
- **IP** (in progress)
- **NR** (No report, when an instructor fails to report a grade for a student).

Grades of A, B, C and D may be modified by a plus (+) or minus (-).

Credit Toward Degree Requirements: A course in which the grade A, B, C, D, P or S is received is counted toward degree requirements. A course in which the grade F, NP or U is received is not counted toward degree requirements. Grades of I or IP are not counted until such times as they are replaced by grades A, B, C, D, P or S.

Grade Points: Grade points are assigned as follows: A+ = 4.0, A = 4.0, A- = 3.7, B+ = 3.3, B= 3.0, B- = 2.7, C+ = 2.3, C= 2.0, C- = 1.7, D+ = 1.3, D= 1.0, D- = 0.7, F= 0.0, I= 0.0, and P/NP = N/A. The grades P, S, NP, U, I and IP carry no grade points and the units in courses so graded are excluded in determination of the grade point average.

Grade Point Average: A student's grade point average is computed on courses undertaken in the University of California, with the exception of courses undertaken in University Extension. Grades A, B, C, D and F are used in determining the grade point average; grades I, IP, P, S, NP and U carry no grade points and are excluded from all grade point computations. The grade of I is excluded from computations.

Change of Grade: All grades except Incomplete and In-Progress are considered final when assigned by an instructor at the end of a term. An instructor may request a change of grade when a computational or procedural error occurred in the original assignment of a grade, but a grade may not be changed as a result of re-evaluation of a student's work. No final grade may be revised as a result of re-examination or the submission of additional work after the close of term.

Grade I (Incomplete): The grade of I may be assigned when the instructor determines that a student's work is of passing quality and represents a significant portion of the requirements for a final grade, but is incomplete for a good cause. (Good cause may include current illness, serious personal problems, an accident, a recent death in the immediate family, a large and necessary increase in working hours, or other situations of equal gravity). It is the student's responsibility to obtain written permission from the instructor to receive an I grade as opposed to a non-passing grade. An Incomplete petition is available from the Office of the Registrar's website and must be filed prior to the end of the final examination period.

If an I grade is assigned, students may receive unit credit and grade points by satisfactorily completing the coursework as specified by the instructor. Students should not re-enroll in the course; if they do, it is recorded twice on the transcript. Once an I grade is assigned, it remains permanently on the transcript along with the passing grade students may later receive for that course.

I grades are not counted in computing the grade point average. An I grade received in the fall term must be replaced by the first day of instruction in the following fall term. An I grade received in the spring or summer terms must be replaced by the first day of instruction in the following spring term.

Except as noted below, any I grade that has not been replaced within the deadlines above will be converted to grade F (or NP/U if taken passed/not passed). After that time, but not retroactively, the grade is counted in computing a student's grade point average.

Exception: If a degree is conferred before the end of the deadlines above following the assignment of an I grade, the grade will not be converted to an F (or NP/U). However, the student still has the option of removing the I grade within the deadlines above. Students with 15 or more units of I on their record may not register without permission of the appropriate dean.

Grade IP (In Progress): For a course extending over more than one term where the evaluation of the student's performance is deferred until the end of the final term, provisional grades of In Progress (IP) shall be assigned in the intervening terms. The provisional grades shall be replaced by the final grade if the student completes the full sequence. The grade IP is not included in the grade point average. If the full sequence of courses is not completed, the IP will be replaced by a grade of Incomplete. Further changes in the student's record will be subject to the rules pertaining to I grades.

Social Sciences, Humanities and Arts Dean Kenji Hakuta scales the heights in California.



ACADEMIC POLICIES & PROCEDURES

Passed/Not Passed (P/NP): Undergraduate students in good standing who are enrolled in at least 12 units may take certain courses on a passed/not passed (P/NP) basis. Students may enroll in one course each term on a P/NP basis (two courses if they have not elected the P/NP in the preceding term).

Changes to and from the P/NP option must be made during the enrollment period. No changes can be made after the first two weeks of classes without the approval of the appropriate dean. A student may not repeat on a P/NP basis a course that was previously taken on a letter-graded basis.

The grade P is assigned for a letter grade of C- or better. If the student earns a grade of D+ or below, the grade will be recorded as NP. In both cases, the student's grade will not be computed into the grade point average.

Credit for courses taken on a P/NP basis is limited to one-third of the total units taken and passed on the UC Merced campus at the time the degree is awarded.

A course that is required or a prerequisite for a student's major may be taken on a P/NP basis only upon approval of the faculty. Schools may designate some courses as passed/not passed only. Students do not have the option of taking these courses for a letter grade.

Satisfactory/Unsatisfactory (S/U): The grade of S is awarded to graduate students for work in graduate courses that otherwise would receive a grade of B or better.

Graduate students, under certain circumstances, may be assigned grades of S or U, but units earned in this way will not be counted in calculating the grade point average. Petitions to elect S/U grading are available from the Graduate Division's website at graduatedivision.ucmerced.edu and must be signed by the student's graduate advisor. Graduate students may petition to take no more than one course per semester on an S/U grading basis. A graduate course in which a C, D or F grade is received may not be repeated with the S/U option.

In specific approved courses, instructors will assign only Satisfactory or Unsatisfactory grades. Such courses count toward the maximum number of units graded S allowable toward the degree, as specified by each degree program.

Grading Options

Unless otherwise stated in the course description, each course is letter graded with a P/NP or S/U option (unless required for your major or graduate program.)

Retroactive Grade Changes

All grades except I and IP are final when filed by an instructor at the end of the semester. No final grade except I may be revised by examination or the submission of additional work after the close of the semester.

If a clerical or procedural error in the reporting of a grade by the instructor can be documented, the student may request a change of

grade with a petition available from school dean's office. The request must be made by the fifth week of the following semester.

Grade changes for "clerical" errors (such as incorrect addition of points), upon documentation, are automatically granted. Requests to interchange P, NP, S or U grades with normal letter grades based upon student need (such as to allow graduation or to meet entrance requirements for professional school) do not involve clerical or procedural errors and are automatically denied. Thus, students should exercise the passed/not passed or satisfactory/unsatisfactory grading options with caution.

Students are reminded of their responsibility to be aware of the procedures and regulations contained in this catalog and the Schedule of Classes, to verify their class schedules, and to familiarize themselves with the expectations of their instructors. No changes, except completion of an I grade as noted above, can be made to the student's record once he or she has graduated.

Final Grades

Grades are generally available as soon as possible after a semester has ended. Students can check their grades online using the MyUCMerced enrollment/records system.

Grade Reports: After grades are recorded for a semester or summer session, they are available online via MyUCMerced. With the availability of online grade reporting, students can print their grade reports from the Internet. Grade reports printed by the Office of the Registrar will be provided at the request of the student.

Minimum Progress

The following provisions apply to all undergraduates. Graduate and professional students with scholarship deficiencies are subject to action at the discretion of the Division of Graduate Studies.

a. Minimum Progress-Qualitative Standards

An undergraduate student will be placed on academic probation if at the end of any term the student's grade point average:

is less than 2.0, but not less than 1.5, for the term;

or

is less than 2.0 for all courses taken within the University of California. An undergraduate student is subject to academic disqualification for further registration in the University if at the end of any term:

the student's grade point average for that term is less than 1.5;

or

the student has completed two consecutive terms on academic probation without achieving a cumulative grade point average of 2.0.

In the case of probation or dismissal, the official transcript will state "not in good standing." Once a student has met qualitative standards for scholarship, the notation will be removed from the transcript and the student will return to good standing.

b. Minimum Progress-Quantitative Standards

An undergraduate student is subject to probation if he or she does not complete a minimum of 27 cumulative units by the end of the first academic year, a minimum of 54 cumulative units by the end of the second academic year, a minimum of 81 cumulative units by the end of the third academic year and a minimum of 108 cumulative units by the end of the fourth academic year (including workload credits). An academic year consists of fall, spring and summer terms. If the student meets the next applicable minimum progress requirement, the student will return to good standing at that time. Students who do not meet the next applicable minimum progress requirement are subject to dismissal.

Minimum progress requirements do not apply to students who have a dean's approval to carry less than the minimum progress load because of medical disability, employment, a serious personal problem, a recent death in the immediate family, the primary responsibility for the care of a family or a serious accident involving the student.

Probation and Disqualification

An undergraduate student on academic probation or subject thereto is under such supervision as the faculty of that student's school may determine. Continued registration of an undergraduate student subject to academic disqualification is at the discretion of the faculty concerned, or its authorized agent, and is subject to such conditions as that faculty may impose.

A student will be placed on probation or subject to disqualification for failure to meet qualitative or quantitative standards of scholarship as described in the minimum progress section.

The qualitative standards of scholarship require that a student maintain a C average (2.0) or better for all work undertaken in the University and for the work undertaken in any one semester.

The quantitative standards, referred to as minimum progress requirements, define scholarship in terms of the number of units that a student must satisfactorily complete. It is assumed that a student will earn the 120-unit minimum degree requirement within 8 semesters (four years). This means students must plan to complete, on average, 15 units per semester.

Dismissal

Undergraduate students may be dismissed for either qualitative or quantitative reasons (defined above) based on the decision of the dean of the school in which the student is enrolled. Should a former UC Merced student later wish to be readmitted to UC Merced, the authority to do so rests with the dean of the school from which the student was dismissed. Students are encouraged to see their advisor or go to the dean's office of their school or to the Student Advising and Learning Center if they need academic advising about probation and dismissal.

Transfer with Scholastic Deficiencies

To transfer from one campus of the University to another, or from one school to another on the same campus, a student who has been academically disqualified or is on academic probation must obtain the approval of the dean to whose jurisdiction the student seeks to transfer.

Transcripts and Records

Transcripts: Transcripts (official and unofficial) may be ordered via MyUCMerced as soon as possible after the end of the semester. Alumni and students who are not registered may order transcripts from the Office of the Registrar. See the Office of the Registrar's website at registrar.ucmerced.edu for further information. At times other than the end of the semester, the normal period required for processing and issuing transcripts for both registered and former students is 7 to 10 working days after receipt of the student's request. There is a charge for each transcript. The total amount due must accompany the application. Students who urgently need a transcript that would normally take 7 to 10 days to issue can request a 48-hour turn-around at a special charge for each copy.



UC Merced graduate students (I. to r. Daniel Santillano, Glen Shaw, Jesus Cisneros) learning the finer points of snow sampling during a field class in Yosemite National Park.

Transcripts of all work done through UC Merced's Division of Professional Studies must be requested directly from that division. Contact Professional Studies at (559) 241-7416. Transcripts of work completed at another campus of the University or at another institution must be requested directly from the campus or institution concerned.

Access to Records: Students are entitled by law and University policy to examine and challenge most of the records that the University maintains on them. These records are confidential and in most circumstances may be released to third parties only with the student's prior consent. Such matters are detailed on Office of the Registrar's website.

ACADEMIC POLICIES & PROCEDURES

Change of Name and Address

Change of Name: Students may petition to change their name on official University records. These petitions can be downloaded from the Office of the Registrar's website. Legally recognized proof of the change of name will be required before the petition is accepted and implemented. (Students planning to graduate should file this petition no later than the fifth week of the semester in which they intend to graduate.)

Change of Address: Students may also update their address(es) using MyUCMerced or a Change of Address form downloaded from Office of the Registrar's website. Failure to file a current address can result in a hold on a student's registration.

Leaving UC Merced

Cancellation/Withdrawal from the University: Students who find that they will not attend the University for a semester in which they have enrolled may cancel their registration only if instruction for that semester has not yet begun. To do so, they must formally request a cancellation of their registration from the University. If instruction has already begun and students find it necessary to stop attending classes, they must formally request a cancellation/withdrawal from the University. Whether students cancel or withdraw, any classes in which they are enrolled will be dropped from their schedule, and they will no longer be eligible to attend for that semester or any future semester until they are readmitted.

Withdrawing from the University means disenrolling from all courses in which a student is enrolled. Students who withdraw during a term must file a Notice of Cancellation/Withdrawal, available from the Office of the Registrar's website at registrar.ucmerced.edu. Before withdrawing, students are urged to consult an academic advisor and the Office of Financial Aid and Scholarships, if appropriate, to consider the full implications of this action.

The Notice of Cancellation/Withdrawal requires approval from the appropriate dean. Please review the refund policies for specific details on refund rules. Students who fail to submit an approved petition for cancellation/withdrawal will receive F, NP or U grades, as appropriate, for all courses in which they are enrolled for that term.

GRADUATION

Residency Requirement: Each candidate for the bachelor's degree must complete 24 of the last 36 units in residence in the school of the University of California in which the degree is to be earned. Under certain circumstances, exceptions may be granted by the appropriate dean, such as when a student attends classes at another UC campus as an approved visitor or participates in one of the following: UC Education Abroad, UC Washington Center Program, or UC Sacramento House.

Scholarship Requirement: To receive a bachelor's degree, a candidate must have a 2.0 grade point average in all courses attempted in the University.

Undergraduate Students

Declaration of Candidacy: Students expecting to complete work for their degree by the end of a semester must declare their candidacy by filing an Application for Graduation, accompanied by an appropriate fee, with the Office of the Registrar for the semester in which they plan to receive the degree. Students have until the end of the fifth week of classes in which to declare.

Nonregistered Students: Students who are not registered must submit the Declaration of Candidacy form that can be downloaded from the Office of the Registrar's website at registrar.ucmerced.edu. It can be mailed along with the



Engineering Professor Roger Bales enjoys kayaking in Merced area waterways.

appropriate fee to the Office of the Registrar. The form must be received by the Registrar's Office by the end of the fifth week of classes.

Degree Check: The Office of the Registrar will check all pertinent records to ensure that the student has completed a minimum of 120 units and appropriate institutional requirements and is in good academic standing. The student's school will check for the fulfillment of major and school requirements.

Confirmation of Candidacy: Students will receive an electronic notification indicating whether they have been advanced to candidacy. To report an error, go to the Office of the Registrar.

Graduate Students

Before a graduate degree can be conferred, candidates must have been advanced to candidacy and completed the master's thesis or doctoral dissertation and any required comprehensive or oral examinations.

Commencement

Commencement exercises to honor students who have earned baccalaureate and graduate degrees, and to give recognition and awards to students who are graduating with distinction, are held each year in May. Students who have earned their degrees in the previous fall semester or in summer sessions are welcome to participate.

Diplomas

Diplomas are not distributed at commencement but are available several months afterward. A student may pick up his or her diploma at the Office of the Registrar or request that it be mailed for a domestic/international mailing fee. The Office of the Registrar will retain diplomas for five years only.

QUESTIONS

For further questions on Academic Policies and Procedures, registration or grades, please contact the Office of the Registrar at (209) 724-2960; visit the website at http://registrar.ucmerced.edu, or e-mail registrar@ucmerced.edu.

COLLEGE ONE: YOUR HOME FOR GENERAL EDUCATION

College One welcomes all undergraduate students to an adventure in intellectual exploration. College One is home to UC Merced's general education program, introducing you to the major domains of intellectual inquiry and helping you build your college-level skills. Promoting and fostering your academic success is our top priority.

What is general education? All universities aspire to educate the whole student. As John Nichols of St. Joseph's University puts it, your major will prepare you to make a living, while general education will equip you with the skills, knowledge and attitudes to make a life.

Society's thorniest problems increasingly require practitioners with diverse knowledge and training to blend their skills in the search for solutions. General education is a pathway for a student to become one of these problemsolvers. You will be entering society in an era of fast-paced change; your future career may be in a field that doesn't even exist today. Through general education, you will craft for yourself the tools that will let you continue to grow in a world that demands lifelong learning for success.

General education at UC Merced will help you grow intellectually by:

- Building your abilities in quantitative reasoning and written, oral and other communication skills; and
- Providing exposure to broad domains of knowledge: arts and humanities; social, behavioral and cognitive sciences; natural sciences; and technologies and engineering methods.

Throughout your undergraduate years, UC Merced's general education program will help you build your ability to communicate with words, numbers and images, and let you discover the many ways in which knowledge is created.

General education at UC Merced places a high premium on demonstrating the ways in which different disciplines can make links with each other. There will also be an emphasis on practicing and applying what you are learning in the classroom--an educational value also reflected in the undergraduate majors at UC Merced.

How will College One help you meet these goals for general education? While UC Merced is new and growing, all faculty and students will be affiliated with College One. The faculty have created a set of principles that embody the kinds of learning to be achieved through general education at UC Merced. You will encounter these principles in action through the Core Course Sequence, a unique opportunity for all UC Merced undergraduates to share a common exploration of the issues that will affect your future. All freshmen and juniors will take a Core Course. You can read more about the Core Course Sequence a little further on in this Catalog.

EDUCATION IS WHAT REMAINS AFTER ONE HAS FORGOTTEN EVERYTHING...LEARNED IN SCHOOL.

Albert Einstein, Recipient of Nobel Prize in Physics and Professor of Theoretical Physics, Princeton University

College One is also a hub for information, both on the UC Merced website and physically, in the Kolligian Library. College One will help you connect with such exciting opportunities as the Freshman Seminar Program, Undergraduate Research Opportunities, and University of California programs in Sacramento, Washington DC and overseas. You will be encouraged to keep track of your progress in meeting your general education goals by the faculty who are all part of College One, as well as by your advisors in the Student Advising and Learning Center and in the Schools.

GUIDING PRINCIPLES FOR GENERAL EDUCATION AT UC MERCED

UC Merced is planning educational experiences designed to prepare well-educated people of the 21st century for the workplace, for advanced education and for a leadership role within their communities. UC Merced graduates will be exceptionally well prepared to navigate and succeed in a complex world. The principles guiding the design and implementation of our academic program are envisioned within a continuum that ranges from preparatory and advanced curricula in general education and in the majors, through a variety of educational activities inside and outside the classroom.

All UC Merced graduates will reflect these principles, which provide the foundation for their education:

- Scientific Literacy: To have a functional understanding of scientific, technological and quantitative information, and to know both how to interpret scientific information and effectively apply quantitative tools;
- Decision Making: To appreciate the various and diverse factors bearing on decisions and the know-how to assemble, evaluate, interpret and use information effectively for critical analysis and problem solving;
- Communication: To convey information to and communicate and interact
 effectively with multiple audiences, using advanced skills in written and
 other modes of communication;
- **Self and Society:** To understand and value diverse perspectives in both the global and community contexts of modern society in order to work knowledgeably and effectively in an ethnically and culturally rich setting;
- Ethics and Responsibility: To follow ethical practices in their professions and communities, and care for future generations through sustainable living and environmental and societal responsibility;
- Leadership and Teamwork: To work effectively in both leadership and team roles, capably making connections and integrating their expertise with the expertise of others;
- Aesthetic Understanding and Creativity: To appreciate and be knowledgeable about human creative expression, including literature and the arts; and
- **Development of Personal Potential:** To be responsible for achieving the full promise of their abilities, including psychological and physical well-being.

GENERAL EDUCATION



Faculty creators of the Core Course sequence: I. to r., Gregg Herken, Henry Forman, Valerie Leppert, Dunya Ramicova, Willem van Breugel, Christopher Viney.

GENERAL EDUCATION REQUIREMENTS

The UC Merced general education program consists of courses that are guided by the Guiding Principles and meet the following requirements for graduation:

- · University requirements,
- · Campus requirements, and
- · School requirements.

A. University Requirements

- University of California Entry Level Writing Requirement (formerly, Subject A Requirement)
- American History and Institutions

University of California Entry Level Writing Requirement (formerly, Subject A Requirement): To succeed at UC Merced, you must be able to understand and to respond adequately to written material typical of reading assignments in freshman courses, including being able to structure and develop an essay that uses written English effectively. If students have not yet satisfied this entrance requirement through one of the alternatives listed below, it is essential that they complete it by the end of the second semester of enrollment at UC Merced. Failure to complete this requirement in the time allowed will result in a hold on a student's registration. Students may satisfy the University of California Entry Level Writing Requirement in any of the following ways:

- Score 3, 4 or 5 on the College Board Advanced Placement Examination in English (Language or Literature);
- Score 680 or higher on the SAT II: Subject Test in Writing;
- Score 5 or higher on the International Baccalaureate Higher Level Examination in English (Language A only);
- Prior to enrolling in the University, complete with a grade of C or better a transferable college course in English composition worth four quarter or three semester units;

- Achieve a passing score on the University's writing proficiency examination, called the University of California Analytical Writing Placement Exam (formerly, Subject A Examination); or
- Complete an acceptable writing course at UC Merced (WRI 1 or other acceptable course.)

The University offers the University of California Analytical Writing Placement Exam (formerly, Subject A Examination) each spring on the second Saturday in May at test centers throughout the state for students who plan to enroll in the University the following fall. California residents who will enter the University as freshmen must take the exam if they have not otherwise satisfied the requirement (by one of the methods listed above). Students must pay a nonrefundable fee of \$65 to cover test administration costs. Students who received admission application fee waivers will automatically have this fee waived.

Students will receive detailed information about the exam in April from the Educational Testing Service (ETS). Students must make checks or money orders payable to ETS and submit them by the date indicated. A postage-paid return envelope will be included. Students who are not from California may take the exam in the fall after enrolling at the University.

University of California Entry Level Writing Requirement/ Subject A Online: Comprehensive information about the University of California Entry Level Writing Requirement/Subject A Requirement and examination is available at http://www.ucop.edu/sas/sub-a/.

American History and Institutions Requirement: As a candidate for an undergraduate degree at UC Merced, you need to demonstrate knowledge of American history and of the principles of American institutions under the federal and state constitutions. You may meet the requirement by completing specific courses or earning a certain score on an examination. Transfer students are urged to complete the requirement before they enroll.

You may satisfy both the American History and American Institutions requirements in the following ways:

- Complete in high school one year of United States history with grades of C or better, or one semester of United States history and one semester of United States government with grades of C or better;
- 2. Achieve a score of 3, 4 or 5 on the College Board Advanced Placement Examination in U.S. History.
- 3. Achieve a score of 550 or better on the SAT II: U.S. History test:
- Complete acceptable course work at a community college or other accredited institution; or
- 5. Complete acceptable course work at UC Merced (both HIST 16 and HIST 17).

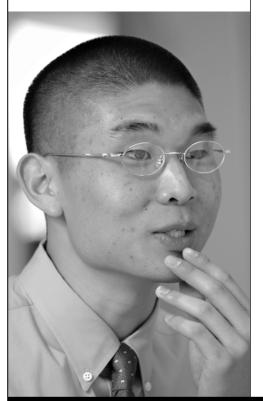
B. Campus Requirements

- Two-Semester Core Course Sequence
- Lower division writing course
- College-Level mathematics/quantitative reasoning course

The World at Home—Planning for the Future in a Complex World

The College One Core Course Sequence is future-oriented, striving to help students gain the intellectual tools, knowledge and insights that will help informed citizens devise future solutions to real-life problems. The UC Merced Core Course Sequence aims to understand the world at large as it is reflected in the world at home--California. By examining the local evidence of global problems, you will begin to grapple with the issues that will affect you personally and professionally.

Core 1 will pose a set of questions as they are framed by the various domains of human knowledge known as the disciplines. Core 100 will give you a chance to build on what you have been learning during your first two years by returning to the questions introduced in Core 1 and trying out different ways to find answers. Core 100 is required of all transfer students as well as all continuing UC Merced students.



In Core 1, UC Merced faculty will introduce you to how their disciplines define the challenges faced by informed citizens of this new century. For example:

- Can advances in technology mitigate the effects of burgeoning populations and resource depletion?
- How will a changing climate affect the future migration of human populations?
- How do citizens decide among conflicting ethical choices, each with a compelling claim?

Faculty from all three Schools will join together to show how such complex questions might best be probed through connecting the insights of their disciplines.

As a junior in Core 100, you will begin to apply what you have learned during your first two years from your lower division general education and the introductory work in your chosen major. Core 100 will give you a chance to mold your own ideas on how people might answer the Core Course questions in the future.

Across the two semesters of the Core Course Sequence, you will:

- work together in small groups on joint projects or problems, to build your leadership and teamwork abilities;
- learn to think analytically and communicate effectively in the context of problems affecting your lives and futures.
- use quantitative methods as well as ethical judgment to make decisions and defend those decisions to your peers;
- write and perform brief plays or songs, or create art in other media, to demonstrate lessons and concepts learned in the course; and
- assist local community groups through service learning.

Lower Division Writing Course: Analytical writing is a means for understanding better what you are learning and conveying your ideas to different audiences: your instructors, your fellow students and people outside the university. The lower division writing requirement will start you on a path of writing development that will continue through your four years at UC Merced.

WRI 10: College Reading and Composition

This course is designed to help you develop your college-level skills in effective use of language, analysis and argumentation, organization, and strategies for creation, revision and editing. It *must* be completed during your freshman or sophomore year.

Mathematics/Quantitative Reasoning: All students will take a college-level mathematics/quantitative reasoning course. For some of you, mathematics and statistics will be an essential tool for mastering a field in depth. For others, you will build your ability to understand how quantitative methods are applied in society to support arguments and solve problems. A variety of courses will be available to meet this requirement, based on your field of interest. Check the requirements of the major that interests you, in the school section of the catalog, for information on courses that satisfy Mathematics/Quantitative Reasoning.

C. School Requirements

The Schools of Engineering, Natural Sciences, and Social Sciences, Humanities and Arts each have a set of general education requirements to be completed if you choose a major offered by that school. School requirements include courses to help you build the collateral knowledge and skills you will need in order to succeed in your major. School requirements also include courses to help you understand the broad domains of knowledge. Check the school section of this catalog for specific requirements.

UC Merced Student Affairs Fellow Jeffrey Chang.

TO THE ENGINEER FALLS THE JOB OF CLOTHING THE BARE BONES OF SCIENCE WITH LIFE, COMFORT AND HOPE.

Herbert Hoover, Engineer and 31st President of the United States

SCHOOL OF ENGINEERING

The mission of the School of Engineering is to provide an exceptional technical and professional education that instills in our students advanced technical skills, effective leadership qualities, and the ability to recognize and build on individual strengths throughout one's career.

WHAT IS ENGINEERING?

Engineering is about problem solving and innovation and about the creation of devices, systems, processes and structures for human use. Engineers create new ideas and then transform those ideas into products and services that improve people's lives. Engineers apply mathematics and the principles of science – particularly chemistry and physics – to solve problems and meet the needs of society. Engineering spans the very small to the very large, from microsensors that can continuously monitor human health to space stations that can support the exploration of new worlds. It also touches our everyday lives. Engineering has provided our shelter, our transportation, our entertainment, our medical supplies and technologies, our water supplies, the food we eat, the movies we watch, the appliances that make our lives easier, and the protection of our environment. Engineering careers are among the highest in demand in the United States, and as a result, provide great personal satisfaction and quality of life. Engineering is a "people-serving profession" and a pathway to financial security. In short, engineering makes the world work!



School of Engineering administration, I. to r., Assistant Dean Germán Gavilán, Dean Jeff Wright and Assistant to Dean Agnes Bardini, with Science and Engineering building rising in background.

THE SCHOOL OF ENGINEERING WILL OFFER THE FOLLOWING MAJORS IN 2005-06:

- Computer Science and Engineering
- Environmental Engineering
- Bioengineering



LETTER OF WELCOME FROM THE DEAN

Dear Future Engineering Student:

I am delighted to learn of your interest in UC Merced and, in particular, your interest in becoming an engineer. Engineering is a people-serving profession – one that provides a solid foundation for careers of leadership and responsibility. You are about to begin an exciting journey. Your engineering education at UC Merced will be both challenging and satisfying, and will give you the chance to meet some extraordinary people: world-class faculty, committed fellow students and dedicated staff. These associations will develop during your time at UC Merced, last throughout your careers and be a source of intellectual nourishment well into the future. From the time you enter our program you will be exposed to new technologies that will become the tools that you will use in solving problems and in delivering exciting new products and services to society. Engineers have been and will continue to be the builders of the things that improve people's lives.

Engineering education is a launch pad. Some of you will go on to pursue careers in engineering design, others will become engineering managers and still others will pursue graduate education in engineering or perhaps go on to other professions such as law or medicine. Once you master the methods of engineering problem-solving, you will have the skills and flexibility to chart your own course. You are to be congratulated for your vision and initiative. I look forward to welcoming you into our program and watching you develop into a leader of tomorrow.

Jeff Wright, Dean
School of Engineering

SCHOOL OF ENGINEERING REQUIREMENTS

All Engineering students, regardless of major, are expected to meet the minimum requirements for the B.S. degree. The School of Engineering degree requirements are:

At least 120 but not more than 132 semester units to include the following:

- At least 45 general education semester units; 31 units are specified
- 20 semester units specified as the science and engineering core
- At least 15 but not more than 20 engineering fundamentals semester units selected from a list of acceptable courses
- At least 26 upper division (major area) semester units selected from a list of acceptable courses designated by the faculty in that area, some of which may be specified
- At least 6 but not more than 12 **technical elective** semester units
- At most, 10 service learning units
- Freshman Seminar (ENGR 90x) or 1 semester unit of service learning during the freshman year
- 1 unit of Professional Seminar (ENGR 191) during the senior year

GENERAL EDUCATION REQUIREMENTS (45 UNITS)

School of Engineering students are required to complete the following list of general education courses.

Lower Division General Education Requirements:

•	The World at Home (CORE 1 and CORE 100) 8 units
•	College Reading and Composition (WRI 10) 4 units
•	Integrated Calculus and Physics (ICP1)8 units
•	Contemporary Biology (BIS 1) 4 units
•	Introduction to Computing I and II (CSE 20 and CSE 21) .4 units
•	Probability and Statistics (MATH 32) 3 units

Additional General Education Requirements:

- Not more than 6 Service Learning units (ENGR 97 or ENGR 197) can qualify for general education units
- General Education Electives (selected from a list of acceptable courses)

First-year Engineering students will have a freshman year that lays the foundation for further study in the majors. Students will have the opportunity to explore the different UC Merced majors during that year through freshman seminars, service learning, research experiences and informal contact with faculty and graduate students.

Two of the freshman courses are common for all UC Merced students: CORE 1 and 100, The World at Home. These provide a framework for the skills and ideals articulated in the UC Merced Guiding Principles for General Education (see General Education section of this catalog), including decision-making, communication, ethics, responsibility, leadership, teamwork, aesthetic understanding, creativity and an appreciation of diverse perspectives in both the global and community contexts.



UC Merced graduate field class in snow hydrology: front, I. to r.: Sara Martin, Daniel Santillano, Robert Root, Ricardo Cisneros, Bob Rice (instructor); back, I. to r.: Don Schweizer, Glen Shaw, John Ewert, Jesus Cisneros.

Science and Engineering Core (20 units): Engineering students are required to complete the following list of science and engineering core courses:

Lower Division Requirements

• General Chemistry (CHEM 2)4 units
• Physics II (PHYS 9)
• Calculus II (MATH 22)
• Multi-Variable Calculus (MATH 23) 4 Units
• Introduction to Linear Algebra and Differential Equations
(MATH 24)

Upper Division Requirements Engineering Fundamentals (15 units; 3 units specified):

• Engineering Economic Analysis (ENGR 155) 3 units Remaining courses should be selected from the list of approved Engineering Fundamentals courses. Some majors may specify particular courses (see your advisor).

A partial list of Engineering Fundamentals courses include:

• Statics (ENGR 50)	2 units
• Dynamics (ENGR 57)	2 units
• Strength of Materials (ENGR 51)	3 units
• Computer Modeling and Analysis (ENGR 52)	3 units
Materials and the Environment (ENGR 53)	4 units
• Fluid Mechanics (ENGR 120)	4 units
• Thermodynamics (ENGR 130)	4 units
• Introduction to Object-Oriented Programming	
(ENGR 140)	3 units
• Discrete Math and Computer Modeling (ENGR 160) .	3 units
• Spatial Analysis and Modeling (ENGR 180)	4 units
Molecular Machinery of Life (BIS 100)	4 Units

Service Learning (SL): Under the advisement of a faculty mentor, students will have the opportunity to form teams that will work with and for an approved community not-for-profit organization — or client — to solve practical engineering problems. For example, a team composed of both lower and upper division students might work together to design, develop, implement and test an information system to serve the needs of a local non-profit service organization. Students will develop skills to create organizational structures within the team; a communications structure with their client organization; and a strategic plan, mission statement and work plan to guide the activities of the team. Interacting closely and continuously with the client, students will learn about the needs of the organization, delineate project objectives, formulate work plans, conduct design activities, implement resulting solutions, and monitor and assess program effectiveness. Students' performance and contribution to the team effort will be formally assessed through regular written reports and panel interviews.

In addition to obtaining practical experience that complements their formal course work, students will gain experience in working in teams, organizing and writing reports and proposals, interacting with clients, performing and evaluating basic engineering designs, and formally evaluating outcomes. Because teams and team activities will extend across multiple semesters and years, clients will be assured of continuity of technical support and ongoing attention to their needs. Students electing to enroll in the UC Merced Service Learning initiative may earn up to two credits per semester for participation, depending on their leadership position within the team for that semester. Not more than a total of 10 service learning credits may be used to fulfill the degree requirement, including up to 6 units that may be counted as general education units. Engineering fundamentals, major area upper division courses, and technical electives requirements are specific to each major. These are presented in the following section on majors.

THE MAJORS

COMPUTER SCIENCE AND ENGINEERING PROGRAM

The undergraduate major in Computer Science and Engineering is designed to provide students with both breadth and depth in the exciting and rapidly expanding fields of

- Computer science the study of computation, including algorithms and data structures, and
- Computer engineering including hardware, software and network architecture

A degree in Computer Science and Engineering from UC Merced will prepare students to assume leadership roles in designing, building and implementing a vast array of powerful new technologies that will continue to advance humankind. As the foundation for innovation in areas ranging from robotics and automation, to informatics and personal computation, careers in computer science and engineering are among the most satisfying and rewarding of any.

Computer Science and Engineering students at UC Merced will work with the top computer scientists and engineers in the world. Our faculty has developed a program of study that combines practical exposure to the most modern technologies available, with a theoretical foundation that will empower students to master future changes and innovation as technologies continue to evolve at an astonishing pace. Our graduates will thus have both tools and insights to propel them into positions of responsibility and leadership across virtually any occupation.

Computer science and engineering constitutes one of the strongest industrial sectors in the region and the nation, offering a broad spectrum of career opportunities. Education at UC Merced will provide the opportunity to participate in innovative classroom learning experiences, to become involved in laboratory research, to participate with fellow students in team activities and projects, and to interact directly with our remarkable faculty. From introductory programming courses through architecture design experiences, and research and team project activities, our students will gain insights that will allow them to excel throughout their chosen career path.

The program includes service learning components designed to engage students in the solution of real-world problems in their community. The team projects will resemble what is found in actual engineering practice, with increasing responsibility as students progress through the program. Engineers need to understand not only the technical but also the social and political contexts of their work. They must be able to communicate and to plan, finance and market their products and ideas. Social science, business, humanities and arts are an important part of the curriculum. The result is a learning experience that is hands-on and creative, engaging and adaptable.

REQUIREMENTS FOR THE COMPUTER SCIENCE AND ENGINEERING (CSE) MAJOR

The **additional** requirements that must be met to receive the B.S. in Computer Science and Engineering at UC Merced are:

Computer Science and Engineering Core (30 units): The computer science and engineering core consists of 8 courses (2 lower division and 6 upper division) designed to provide students a common foundation of core knowledge specific to the discipline.

Lower Division Courses

Upper Division Courses

Algorithm Design and Analysis (CSE 100) . . . 4 units
Database Systems (CSE 111) 4 units
Software Engineering (CSE 120) 4 units
Computer Architecture (CSE 140) 4 units
Introduction to Operating Systems (CSE 150) . . . 4 units
Networking (CSE 160) 4 units

Technical Electives: Technical electives should be selected in a manner that is complementary to, yet integrated with, your major area of study, and should be determined through close interaction with your major area advisor. These courses should be selected from the computer science upper division technical electives, or with approval, include other upper division courses outside your major.

SAMPLE PLAN OF STUDY FOR COMPUTER SCIENCE & ENGINEERING DEGREE

SEMESTER 1	SEMESTER 2
CORE 1 The World at Home4	MATH 22 Calculus II4
CSE 20 Introduction to Computing 1	CSE 21 Introduction to Computing 2
Service Learning: Engineering Projects in Community Service1	BIS 1 Contemporary Biology4
ICP 1 Integrated Calculus and Physics8	PHYS 9 Physics II4
	ENGR 90x Engineering Freshman Seminar1
Semester Units 15	Semester Units 15
SEMESTER 3	SEMESTER 4
MATH 32 Probability and Statistics	MATH 24 Introduction to Linear Algebra and Differential Equations .4
CHEM 2 General Chemistry	Engineering Fundamentals
MATH 23 Multi-Variable Calculus	CSE 31 Introduction to Computer Science and Engineering II .3
CSE 30 Introduction to Computer Science and Engineering I3	WRI 10 College Reading and Composition4
Service Learning: Engineering Projects in Community Service1	Service Learning: Engineering Projects in Community Service 1
Semester Units 15	Semester Units 15
SEMESTER 5	SEMESTER 6
Engineering Fundamentals	CSE 140 Computer Architecture
Engineering Fundamentals	CSE 120 Software Engineering4
CSE 100 Algorithm Design and Analysis	CORE 100 The World at Home
General Education Elective	Engineering Fundamentals
Service Learning: Engineering Projects in Community Service1	Service Learning: Engineering Projects in Community Service 1
Semester Units 15	Semester Units 16
SEMESTER 7	SEMESTER 8
CSE 150 Introductions to Operating Systems	CSE 111 Database Systems
ENGR 155 Engineering Economics Analysis	CSE 160 Networking
Technical Elective	Technical Elective
General Education Elective	Technical Elective
Service Learning: Engineering Projects in Community Service 1	ENGR 191 Professional Seminar
Semester Units 16	Semester Units 16
	Total Program Units 123

ENVIRONMENTAL ENGINEERING PROGRAM

The undergraduate major in Environmental Engineering prepares students for careers in both industry and government agencies concerned with managing water, energy, public health and the environment. The program is also a good foundation for further study in earth science, engineering, business, management, law and public health. The curriculum provides students with a quantitative understanding of the physical, chemical and biological principles that control air, water and habitat quality and sustainability on Earth, along with expertise in the design, development, implementation and assessment of engineering solutions to environmental problems.

Environmental engineers are distinguished from other environmental professionals through their focus on problem solving, design and implementation of technological or management systems. Environmental engineers search for creative and economical ways to use resources efficiently, limit the release of residuals into the environment, develop sensitive techniques to track pollutants once released and find effective methods to remediate spoiled resources. They serve as the vital link between scientific discovery, technological development and the societal need for protecting human health and ecological integrity. In the coming decades, environmental engineers will increasingly be called upon to address broader issues of environmental sustainability by minimizing the release of residuals through altered production processes and choice of materials; by capturing the resource value of wastes through recovery, recycling and reuse; and by managing natural resources to meet competing societal objectives.

UC Merced emphasizes a highly interdisciplinary approach to environmental engineering, combining a strong theoretical foundation with field studies, laboratory experiments and computations. Core courses within the major provide students with a firm foundation in the physical and life sciences and the ways that they apply to energy, hydrology, air and water quality issues. Emphasis areas allow students the flexibility to study in more depth by following tracks developed in consultation with their academic advisor(s). The main areas of emphasis for Environmental Engineering at UC Merced are hydrology, water quality, air pollution and energy sustainability.

Hydrology: focuses the sources, balance and use of water in both natural and managed environments, including precipitation, mountain snowpack, river runoff, vegetation water use and groundwater. Both the physical and chemical aspects of the water cycle are included.

Water quality: focuses on engineering solutions to water and waste issues, including measurement technology, water quality assessments, treatment systems and remediation of contaminated waters. Physical, chemical and biological aspects are included.

Air pollution: focuses on the measurement, sources, fate, effects and engineering solutions to air quality problems, both regionally and in a broader national and global context. Both the physical and chemical aspects of atmospheric pollution are included.

Energy sustainability: focuses on society's demand for and use of energy, and on the planning and design of renewable energy systems, with particular emphasis on solar energy.

The program includes service learning components designed to engage students in the solution of real-world problems in their community. The team projects will resemble those found in actual engineering practice, with increasing responsibility as students progress through the program. Engineers need to understand not only the technical but also the social and political contexts of their work. They must be able to communicate, and to plan, finance and market their products and ideas. Social science, business, humanities and arts are an important part of the curriculum. The result is a curriculum that is hands-on and creative, engaging and adaptable.

REQUIREMENTS FOR THE ENVIRONMENTAL ENGINEERING (ENVE) MAJOR

The **additional requirements** that must be met to receive the B.S. in Environmental Engineering at UC Merced are:

Environmental Engineering Core (16 units): The environmental engineering core consists of 4 courses designed to give all students a common foundation of core knowledge specific to the discipline:

Lower Division Courses

• Introduction to Environmental Science and Technology (ENVE 20) . .4 units

Upper Division Courses

•	Environmental Chemistry (ENVE 100) 4 units
•	Hydrology and Climate (ENVE 110) 4 units
•	Meteorology and Air Pollution (FNVF 130) 4 units

Technical electives: Technical electives should be selected in a manner that is complementary to, yet integrated with, your major area of study, and should be determined through close interaction with your major area advisor. These courses should be selected from the following list of approved technical electives or, with approval, include other upper division courses outside your major:

merade office apper division courses outside your major.
• Subsurface Hydrology (ENVE 112) 4 units
• Mountain Hydrology of the Western States (ENVE 114)4 units
• Global Change (ENVE 118) 4 units
• Environmental Microbiology (ENVE 121) 4 units
• Water Resources and Management (ENVE 140)3 units
• Remote Sensing of the Environment (ENVE 152) 3 units
• Sustainable Energy (ENVE 160) 4 units
• Modeling and Design of Energy Systems (ENVE 162)3 units
• Contaminant Fate and Transport (ENVE 170) units
• Water and Wastewater Treatment (ENVE 176)3 units
• Field Methods in Snow Hydrology (ENVE 181)
• Field Methods in Surface Hydrology (ENVE 182)1-3 units
\bullet Field Methods in Subsurface Hydrology (ENVE 183) \dots 1-3 units
• Field Methods in Environmental Chemistry (ENVE 184) .1-3 units
• Watershed Biogeochemistry (ESS 105)3 units
• Air Pollution Control (ENVE 132))

List of courses for emphasis tracks: Recommended courses to choose from for emphasis tracks.

Hydrology

Subsurface Hydrology (ENVE 112)
Mountain Hydrology of the Western U.S. (ENVE 114) \dots .4 units
Remote Sensing of the Environment (ENVE 152) 3 units
Watershed Biogeochemistry (ESS 105)
Water Resources and Management (ENVE 140)3 units
Field Methods in Snow Hydrology (ENVE 181)
Field Methods in Surface Hydrology (ENVE 182)1-3 units
Field Methods in Subsurface Hydrology (ENVE 183) 1-3 units

Water quality

Subsurface Hydrology (ENVE 112)
Environmental Microbiology (ENVE 121) 4 units
Water Resources and Management (ENVE 140)3 units
Contaminant Fate and Transport (ENVE 170)3 units
Water and Wastewater Treatment (ENVE 176)3 units
Field Methods in Subsurface Hydrology (ENVE 183)1-3 units
Field Methods in Environmental Chemistry (ENVE 184)1-3 units

Air pollution

Global Change (ENVE 118)	units
Water Resources and Management (ENVE 140) $\ldots3$	units
Remote Sensing of the Environment (ENVE 152) $\dots \dots .3$	units
Air Pollution Control (ENVE 132)	units
Watershed Biogeochemistry (ESS 105)	units
Sustainable Energy (ENVE 160)	units

Sustainable energy

Global Change (ENVE 118)
Water Resources and Management (ENVE 140)3 units
Sustainable Energy (ENVE 160)
Modeling and Design of Energy Systems (ENVE 162)3 units
Heat Transfer (ENGR 135)
Air Pollution Control (ENVE 132))

Additional degree requirements (5-7 units):

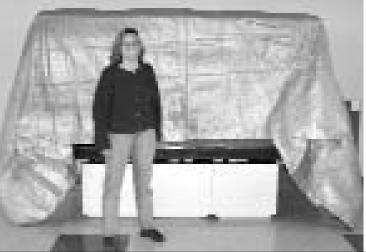
•	Principles of Organic Chemistry (CHEM 8)	.4	units
•	At least one Field Methods course	-3	units



Engineering Professor Christopher Viney's research in biomolecular materials has included work on the special characteristics of giraffe saliva, spider silk and slug slime.

SAMPLE PLAN OF STUDY FOR ENVIRONMENTAL ENGINEERING DEGREE

SEMESTER 1	SEMESTER 2
CORE 1 The World at Home	MATH 22 Calculus II4
CSE 20 Introduction to Computing 1	CSE 21 Introduction to Computing 2
Service Learning: Engineering Projects in Community Service1	BIS 1 Contemporary Biology4
ICP 1 Integrated Calculus and Physics8	PHYS 9 Physics II
	ENGR 90X Freshman Seminar or Service Learning1
Semester Units 15	Semester Units 15
SEMESTER 3	SEMESTER 4
MATH 32 Probability and Statistics	MATH 24 Introduction to Linear Algebra and Differential Equations .4
CHEM 2 General Chemistry	CHEM 8 Principles of Organic Chemistry
MATH 23 Multi-Variable Calculus	Engineering Fundamentals
ENVE 20 Introduction to Environmental Science and Technology 4	WRI 10 College Reading and Composition4
Service Learning: Engineering Projects in Community Service1	Service Learning: Engineering Projects in Community Service1
Semester Units 16	Semester Units 15
SEMESTER 5	SEMESTER 6
Engineering Fundamentals	ENVE 100 Environmental Chemistry
Engineering Fundamentals	ENVE 130 Meteorology and Air Pollution
Engineering Fundamentals	CORE 100 The World at Home
General Education Elective	ENGR 155 Engineering Economics Analysis
Service Learning: Engineering Projects in Community Service1	Service Learning: Engineering Projects in Community Service1
Semester Units 15	Semester Units 16
SEMESTER 7	SEMESTER 8
ENVE 110 Hydrology and Climate	Technical Elective with lab4
Technical Elective with Design	Technical Elective with Design
Technical Elective with lab	Free Elective
General Education Elective	Field Methods3
Service Learning: Engineering Projects in Community Service1	ENGR 191 Professional Seminar
Semester Units 16	Semester Units 15
	Total Program Units 123



Engineering Professor Valerie Leppert preparing to unveil an interactive physics exhibit created at Castle Science and Technology Center by UC Merced's first Foster Center Service Learning Team.

BIOENGINEERING PROGRAM

Bioengineering is a highly interdisciplinary field in which the techniques, devices, materials and resourcefulness of engineers are used to address problems in biology and healthcare; lessons from biology are used to inspire design and inform progress in engineering. During the past 40 years, this synergy between biology and engineering has led to a wide range of implantable materials, diagnostic devices, sensors and molecular characterization techniques, and it has produced tools that greatly expedited the sequencing of the human genome. With these practical innovations has come a rapidly increasing need for personnel with the necessary hybrid skills to capitalize on them, so undergraduate bioengineering programs have proliferated alongside the continued growth of bioengineering research.

Most recently, convergence between engineering and biology at the nanoscale level – the level of biological molecules, molecular aggregates and cellular processes – has begun to offer new, rich areas of study and commercialization. Examples of the devices, processes, interactions and materials that are of interest in this interdisciplinary context include:

- Computers inspired by biological analogs that are smaller and/or faster and/or process information more efficiently than today's computers; use of individual molecules as switches and data storage media; and methods for manipulating the molecules from which such "hardware" is produced
- Food-related innovations, for example, smart packaging that can sense the internal and external environment and provide a signal (such as a color change) that alerts users to undesirable storage conditions, product spoiling or product tampering
- Adaptive materials that can change their properties (shape, transparency, strength, flexibility) in response to changes in their environment and self-healing materials
- Interactions between nanoparticles and biological tissue
- Tailored interfaces between biomolecules and artificial substrates
- Self-assembly of materials, structures and devices
- De novo design of proteins and other functional polymers inspired by nature
- Skin-care products and medications containing nanoparticulates that can penetrate into or through skin
- Sensors and "bots" that can replace defective physiological counterparts in humans and animals; implants and prosthetics constructed from nanocomposites that closely resemble natural tissue; and biosensors, which can be designed to nanodimensions, mounted on a single chip and used in remote diagnoses
- Fine-scale ceramic particles for use as precursors for tough monolithic ceramic artifacts (e.g. ceramic turbine blades and car engines) based on ceramic nanoprecipitates produced by bacteria.

The undergraduate major in Bioengineering is designed to provide students with both breadth and depth in the exciting and rapidly expanding field of nanobioengineering. The nanobioengineering track reflects the fact that synergy is here to stay between the "nano" and "bio" themes in engineering and science. The name also highlights an initial focus on things molecular, supramolecular,

cellular and material, which will allow the program to draw efficiently on the talents of the biologists, chemists, physicists and other UC Merced faculty in basic engineering and science programs.

UC Merced Bioengineering graduates will find employment in diverse fields encompassing healthcare delivery, medical device technology, interdisciplinary research, patent consultancy, materials science, education, food biotechnology, personal care products industries and government agencies. Bioengineers are attractive to employers because, through studying and graduating in this type of especially creative intellectual environment, they have clearly demonstrated an ability to bridge traditional divides between disciplines, communicate flexibly with different intellectual constituencies and thrive in a context where knowledge is being created especially rapidly.

REQUIREMENTS FOR THE BIOENGINEERING (BIOE) MAJOR

The **additional requirements** that must be met to receive the B.S. in Bioengineering at UC Merced:

Bioengineering Core (23 units): The bioengineering core consists of 7 courses (1 lower division and 6 upper division) designed to give all students a common foundation of core knowledge specific to the discipline.

Lower Division Courses

•	Introduction	to Bioengineering	(BIOE 30)	4 units
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Upper Division Courses

opper Division Courses
• Physiology for Engineers (BIOE 100) 4 units
\bullet Modeling Nanoscale Processes in Biology (BIOE 101) \ldots .3 units
• Biosensors (BIOE 102) 4 units
• Molecular Biology (BIS 102) 4 units
• Biophysics (BIS 104) 4 units

Technical Electives: Technical electives should be selected in a manner that is complementary to, yet integrated with, your major area of study, and should be determined through close interaction with your major area advisor. For the initial track in Nanobioengineering, these electives should be chosen from among the following:

• Self-Assembling Molecular Systems (BIOE 110)3 units
• Biomembranes (BIOE 111)
• Biomolecule-Substrate Interactions (BIOE 112) 3 units
• Bioinstrumentation (BIOE 113)
• Research credit taken during the senior year

Additional degree requirements (11-14 units):

• Principles of Organic Chemistry (CHEM 8) 4 un	its
• Service Learning (ENGR 97 or ENGR 197)	its

• Service Learning (ENGR 97 or ENGR 197)-10 unit

PLAN OF STUDY FOR BIOENGINEERING DEGREE

CORE 100 The World at Home4 Service Learning: Engineering Projects in Community Service . .1

SEMESTER 1	SEMESTER 7	
CORE 1 The World at Home4	BIOE 100 Physiology for Engineers	4
CSE 20 Introduction to Computing 1	BIOE 101 Modeling Nanoscale Processes in Biology	3
Service Learning: Engineering Projects in Community Service1	BIOE 102 Biosensors	4
ICP 1 Integrated Calculus and Physics	General Education Elective	4
	Service Learning: Engineering Projects in Community Service	1
Semester Units 15	Semester Units	16
SEMESTER 2	SEMESTER 8	
MATH 22 Calculus II4	BIOE 110 Self-Assembling Molecular Systems	3
CSE 21 Introduction to Computing 2	BIOE 111 Biomembranes	3
BIS 1 Contemporary Biology	BIOE 112 Bio-Molecule Substrate Interactions	3
PHYS 9 Physics II	Free Elective	4
ENGR 90X Freshman Seminar or Service Learning1	ENGR 191 Professional Seminar	1
Semester Units 15	Semester Units	14
SEMESTER 3	Total Program Units	124
MATH 32 Probability and Statistics	iotai i iogiani onito	
CHEM 2 General Chemistry		
MATH 23 Multi-Variable Calculus		
BIOE 30 Introduction to Bioengineering	6	N.
Service Learning: Engineering Projects in Community Service1	ne.	5
Semester Units 16	30	f,
SEMESTER 4		
MATH 24 Introduction to Linear Algebra and Differential Equations4		
CHEM 8 Principles of Organic Chemistry	1796	
ENGR 45 Introduction to Materials	The same of the sa	
WRI 10 College Reading and Composition4	11.05-21.0	
Semester Units 16	1022	
SEMESTER 5		
ENGR 130 Thermodynamics		
ENGR 52 Computer Modeling & Analysis	The state of the s	2
BIS 100 Molecular Machinery of Life	Engineering/Natural Sciences Profe	
General Education Elective	Roland Winston displays prototype voltaic concentrator, a breakthroug	
Service Learning: Engineering Projects in Community Service 1	solar energy which he developed v three UC Merced graduate student	with
Semester Units 16	Jeffrey Gordon, first UC Merced dis quished scientist visitor.	
	guinta scenas visitor	
SEMESTER 6		
SEMESTER 6 BIS 102 Molecular Biology		

16



14

Semester Units

THE MOST INCOMPREHENSIBLE THING ABOUT THE WORLD IS THAT IT IS COMPREHENSIBLE.

-Albert Einstein (1879–1955)

The mission of the School of Natural Sciences is to share the joy of discovery of our natural world, to provide a stimulating environment that enables our students to better understand the scientific foundation of the world in which we live and to develop the skills of the next generation of leaders to meet the scientific challenges of the 21st century. Science, technology and innovation are the keys to future prosperity and quality of life.

SCIENCE IS ABOUT DISCOVERY

THE SCIENTIST DOES NOT STUDY NATURE BECAUSE IT IS USEFUL; HE STUDIES IT BECAUSE HE DELIGHTS IN IT, AND HE DELIGHTS IN IT BECAUSE IT IS BEAUTIFUL. IF NATURE WERE NOT BEAUTIFUL, IT WOULD NOT BE WORTH KNOWING, AND IF NATURE WERE NOT WORTH KNOWING, LIFE WOULD NOT BE WORTH LIVING.

-Jules Henri Poincaré (1854–1912)

Mathematics, physics, biology, chemistry and Earth systems science are the links to making discoveries about the natural world, the impact of human activities on that world and the impact of that world on human health. The academic programs in the School of Natural Sciences are designed to help students learn fundamental scientific principles in the context of the real world.

SCIENCE IS ABOUT CREATIVITY, INNOVATION AND TECHNOLOGY

DISCOVERY CONSISTS IN SEEING WHAT EVERYONE ELSE HAS SEEN AND THINKING WHAT NO ONE ELSE HAS THOUGHT.

-Albert Szent-Gyorgi (1893–1986)

Answering questions requires creativity and innovation – creativity to think about a problem in a different way; to design the strategy to, for example, discover the gene(s) responsible for asthma, cancer or cardiovascular disease; to generate ideas for new technologies. Students in the School of Natural Sciences will receive the foundational learning to create innovative technologies to solve problems and implement solutions.

SCIENCE IS ABOUT STEWARDSHIP OF OUR NATURAL RESOURCES

A THING IS RIGHT IF IT INTENDS TO PRESERVE THE INTEGRITY, STABILITY AND BEAUTY OF THE BIOTIC COMMUNITY.

-Aldo Leopold (1887-1948)

Understanding and prediction must precede protection. Students in the School of Natural Sciences will fully understand the complex interactions between the physical and biological world and the consequences of society's actions on the Earth and its biota. With this understanding, they will be well positioned to manage and preserve our resources for future generations.

SCIENCE IS ABOUT UNDERSTANDING THE HUMAN CONDITION LOUIS PASTEUR'S THEORY OF GERMS IS RIDICULOUS FICTION.

–Pierre Pachet, 1872

The understanding of science has improved and will continue to improve. Health and disease, prevention and treatment rely on understanding complex systems. Students in Natural Sciences at UC Merced will be at the forefront of state-of-the art research and technology to unravel biological complexity. They will be the world's future scientists, healers and policy makers.



LETTER OF WELCOME FROM THE DEAN

Dear Prospective Science Students,

The entire UC Merced Natural Sciences faculty invites you to join one of the greatest adventures of all time – discovering how our universe works and applying this knowledge to improving human well-being. You live in an age of immense challenges and equally immense opportunities. Each year brings new crises in human health, energy production and natural resources, yet each year also brings stunning new scientific and technical advances that were unimaginable just a few years earlier. Entering the School of Natural Sciences is the first step towards joining the worldwide team of men and women working to develop and apply new scientific knowledge.

A degree in the sciences opens the door to a vast array of exciting careers. Graduates from the UC Merced School of Natural Sciences will have the practical skills to enter the high-tech job market directly as well as the in-depth knowledge needed to succeed in professional schools or graduate programs. We have created a range of multidisciplinary majors in some of the most exciting and innovative areas of science: biological sciences, Earth systems sciences and human biology. In addition, we are planning new degree programs in chemical sciences, mathematical sciences and physics for Fall 2006.

I personally welcome you to the exciting world of science and invite you to visit me or any of our faculty members to talk about the many opportunities for you in the School of Natural Sciences.

Maria Pallavicini, Dean School of Natural Sciences

SCHOOL OF NATURAL SCIENCES REQUIREMENTS

All School of Natural Sciences students, regardless of major, are expected to meet the minimum requirements for the BS and BA degrees. The School of Natural Sciences degree requirements are:

At least 120, but not more than 136 semester units to include the following:

- At least 46 general education semester units.
- At least 60 semester units of upper division courses.

General Education Requirements (46-47 units): School of Natural Science students are required to complete the following list of general education courses.

Math/Science Preparatory Curricula:

• Calculus of a Single Variable I (MATH 21)* 4 units
• Probability and Statistics (MATH 32)
• Introductory Physics I (PHYS 8)*
• Computer Science Course
• General Chemistry (CHEM 2) 4 units
*Integrated Calculus/Physics (ICP 1, 8 units) may be taken in place of MATH 21 and PHYS 8

General Education Courses Outside Natural Sciences and Engineering:

•	The World at Home (CORE 1 and CORE 100) 8 units
•	College Reading and Composition (WRI 10) 4 units
•	Lower Division General Education elective 4 units
•	Upper Division General Education electives (with one course emphasizing written or oral communication)
•	Freshman Seminar

Students in Natural Sciences will have a freshman year that lays the foundation for further study in the majors. Students will have the opportunity to explore the different UC Merced majors during that year through freshman seminars, research experiences and informal contact with faculty and graduate students. The first course of the Core Course sequence, CORE 1, The World at Home, is common for all UC Merced students. This course lays the foundation in skills and ideals articulated in the UC Merced Guiding Principles

for General Education (see General Education section of this catalog). These include decision-making, communication, ethics, responsibility, leadership, teamwork, aesthetic understanding, creativity and an appreciation of diverse perspectives in both the global and community contexts. All UC Merced students will also take CORE 100, The World at Home, as a junior.

Major area upper division courses and emphasis track requirements are unique to each major. These are presented in the following section on Majors.



THE MAJORS

BIOLOGICAL SCIENCES PROGRAM

The Biological Sciences address many of the most important and fundamental questions about our world: What is life? How does our brain produce our ideas and emotions? What are the limits to human life and physical capabilities? How do we feed the world's growing population? How can we ensure that our children won't have to worry about disease? Moreover, there has never been a more exciting and important time to study biology. From the mapping of the genome to understanding the molecular basis of human disease to predicting the effects of global climate change on ecosystems to understanding fundamental processes that produce and sustain life on Earth, the Biological Sciences are at the forefront of finding answers to some of society's most vexing problems.

The undergraduate major in Biological Sciences is an excellent first step towards exciting careers in biology and the health sciences. This program teaches biology as a multidisciplinary science, reflecting the increasing role of chemistry, physics, mathematics, computer science and advanced technologies in the life sciences. The core of the Biological Sciences major is a series of six courses that provide a solid foundation in the key areas of modern life sciences: molecular, evolutionary and cellular biology, genetics and genomics, and computational biology. Students majoring in Biological Sciences will then choose an emphasis area that will provide in-depth lecture and laboratory courses on specific biological topics. UC Merced will open with five Biological Sciences emphasis areas: 1) Molecular Biology and Biochemistry; 2) Cell Biology and Development; 3) Bioinformatics and Computational Biology; 4) Microbiology and Immunology; and 5) Ecology and Evolutionary Biology. Biological Sciences majors also have the opportunity to apply for a Master's Degree program requiring an additional year of study.

The major in Biological Sciences will provide students with the skills and knowledge to pursue studies in graduate programs and professional schools in preparation for careers in basic and applied biological research, medicine, dentistry, veterinary medicine, nursing, pharmacy and other health-related fields. Graduates of this program will also be well prepared for positions in the biotechnology and pharmaceutical industries, health care, conservation management, as well as careers such as law, journalism, policy and business, which increasingly involve the biological sciences. In addition, the breadth and rigor of this program will be an excellent preparation for graduates to teach science at the elementary or high school levels.

Natural Sciences Professor Arnold Kim outlines UC Merced mathematics courses.

Molecular biology and biochemistry. This emphasis focuses on the molecular processes underlying life, including macromolecular structure and function, enzyme catalysis, metabolism and gene regulation.

Cell biology and development. This emphasis focuses on the molecular interactions that govern cell function, life cycle and specialization, as well as the cellular interactions that mediate the development and function of multicellular organisms.

Bioinformatics and computational biology. This emphasis focuses on the mathematics and information science of modern biology, including DNA sequence analysis, models of metabolism and gene regulation, and the analysis of high-throughput biological data.

Microbiology and immunology. This emphasis focuses on understanding the biology of yeast, viruses and bacteria, as well as the mechanisms of microbial pathogenesis and host immune response.

Ecology and evolutionary biology: This emphasis focuses on the theory and molecular mechanisms of evolution, as well as the origins and diversity of life on Earth.

In all emphasis areas, strong linkages will be made to the real-world value of this knowledge, such as understanding human disease and prevention, emerging threats from new infectious diseases and bioterrorism, and appreciating the ecological and evolutionary processes that operate at all levels of organization to generate and sustain life on Earth.

Transfer Students. Transfer students who wish to major in Biological Sciences should complete one year of calculus, one year of physics, one year of general chemistry, one to two semesters of organic chemistry, and two to three semesters of general biology. Students should check with the UC Merced Internet site (http://admissions.ucmerced.edu/ and click on "Transfer Admissions") for more information on how courses will transfer to UC Merced.

REQUIREMENTS FOR THE BIOLOGICAL SCIENCES (BIS) MAJOR

In **addition** to adhering to the UC Merced and School of Natural Sciences requirements, the additional requirements that must be met to receive the B.S. in Biological Sciences at UC Merced are:

Biological Sciences Requirements (59-64 units): The Biological Sciences major consists of 16 courses (5 lower division and 11 upper division) designed to give all students a common foundation of core knowledge specific to the discipline.

Lower Division Major Requirements

• Contemporary Biology (BIS 1)	units
• Principles of Organic Chemistry (CHEM 8) 4	units
• Principles of Physical Chemistry (CHEM 10) 4	units
Mathematical Biology (MATH 30) or	
Calculus of a Single Variable II (MATH 22) 4	units
• Introductory Physics II (PHYS 9)	units

Upper Division Major Requirements
• Molecular Machinery of Life (BIS 100) 4 units
• The Cell (BIS 110)
• Genetics (BIS 140)
• Evolution (BIS 141)
• Mathematical Modeling for Biologists (BIS 180) 4 units
Additional Upper Division Courses
Research seminar (BIS 190)
• Research Projects in Biological Sciences (BIS 195) 1-6 units
• One non-biology science or engineering course 3-4 units
Upper Division - Emphasis Track
One course with lab from emphasis track
Two additional courses from emphasis track 8 units
Emphasis Track courses should be chosen from
the following list
Molecular Biology and Biochemistry:
• Biochemistry (BIS 101) *
Molecular Biology (BIS 102) *
• Enzymology (BIS 105) *
• Signal Transduction and Growth Control (BIS 112) 4 units
• Endocrinology*
One must be taken with lab component
Cell Biology and Development:
• Cells, Tissues and Organs (BIS 111)4 units
• Signal Transduction and Growth Control (BIS 112) 4 units
• Embryos, Genes and Development (BIS 150)4 units
• Human Physiology (BIS 161)*4 units
• Endocrinology (BIS 163)*
• Neurobiology (BIS 170) *
*One must be taken with lab component
Bioinformatics and Computational Biology:
Biophysics (BIS 104) *
• Comparative Genomics (BIS 142)* 4 units
• Biostatistics (BIS 175) 4 units
• Survey of Computational Biology (BIS 181) 4 units
• Bioinformatics (BIS 182)4 units
• Algorithm Design & Analysis (CSE 100) 4 units
• Database Systems (CSE 111) 4 units
* One must be taken with lab component
Microbiology and Immunology:
General Microbiology (BIS 120) *
Microbial Pathogenesis (BIS 122)
Human Parasitology (BIS 123)
• Emerging Public Health Threats (BIS 125) 4 units
General Virology (BIS 127)
Molecular Immunology (BIS 151) *
Cancer Genetics and Tumor Biology (BIS 152) 4 units
*One must be taken with lab component

SCHOOL OF NATURAL SCIENCES

Ecology and Evolutionary Biology: Comparative Genomics (BIS 142)*4 units Biodiversity and the Tree of Life (BIS 143)4 units Phylogenetics (BIS 144)*4 units Introduction to Population and Community Ecology (BIS 145)4 units Paleobiology (BIS 146)4 units *One must be

• Embryos, Genes and Development (BIS 150) 4 units
• Evolution and Development (BIS 153)4 units
• Comparative Physiology (BIS 160)*
• Evolutionary Constraints of Physiology (BIS 162)4 units
• Population Genetics (BIS 183)
*One must be taken with lab component

SAMPLE PLAN OF STUDY FOR BIOLOGICAL SCIENCES DEGREE

SEMESTER 1	SEMESTER 2
BIS 1 Contemporary Biology4	MATH 21 Calculus of a Single Variable I
CHEM 2 General Chemistry	CHEM 8 Principles of Organic Chemistry@
CORE 1 The World at Home4	Elective
	BIS 90x Freshman Seminar
Semester Units 12	Semester Units 13
SEMESTER 3	SEMESTER 4
BIS 100 Molecular Machinery of Life	BIS 110 The Cell
CHEM 10 Principles of Physical Chemistry	MATH 32 Probability & Statistics
MATH 22 Calculus of a Single Variable II#	PHYS 8 Introductory Physics I
WRI 10 College Reading and Composition4	General Education Elective
	Computer Science Course
Semester Units 16	Semester Units 17
SEMESTER 5	SEMESTER 6
BIS 140 Genetics	BIS 141 Evolution
BIS 180 Mathematical Modeling for Biologists	Bioscience Emphasis
General Education Elective (w/emphasis. on communication)4	General Education Elective
PHYS 9 Introductory Physics II4	CORE 100 The World at Home4
Semester Units 16	Semester Units 16
SEMESTER 7	SEMESTER 8
Bioscience Emphasis (with lab)	Bioscience Emphasis4
Elective4	Science/Math/Eng. Elective
General Education Elective	General Education Elective
BIS 195 Research Projects in Biological Sciences*2	BIS 195 Research Projects in Biological Sciences
	BIS 190 Research Seminar
Semester Units 15	Semester Units 15
	Total Program Units 120
	*In the first semester of 'Research Projects in Biological Sciences' we recommend that the students attend presentations of the faculty research and rotate through several labs.
	# Mathematical Biology (MATH 30) may be substituted for MATH 22
	@ Students interested in medical school should take a second semester

EARTH SYSTEMS SCIENCE PROGRAM

The undergraduate major in Earth Systems Science is designed to provide students with a quantitative understanding of the physical, chemical and biological principles that control the processes, reactions and evolution of the Earth as a support system for life. Emphasis is given to the interactions between biological systems and physical earth processes. Core courses within the major provide students with a firm foundation in the fundamentals of chemistry, biology, hydrology, ecology and Earth sciences, while emphasis areas allow students the flexibility to pursue disciplinary areas in more depth. This major emphasizes a highly interdisciplinary approach to Earth Systems Science, incorporating field studies, laboratory experiments and computations. Complementary coursework in the social sciences exposes students to the political, economic and societal implications of human interactions with the environment.

Graduates of this major will have a strong background in the theory and application of Earth Systems Science. They will be well prepared for either graduate studies or jobs in the areas of environmental conservation, ecosystem and natural resource management and science, and many aspects of agricultural sciences. Additionally, Earth Systems Science is an excellent foundation for professional careers in law, policy and administration that increasingly involve the environmental sciences.

The location of UC Merced in the San Joaquin Valley near the Sierra Nevada offers an excellent and diverse real-world laboratory for studying the natural environment and the way it is affected by human activity. Additionally, the UC Merced Sierra Nevada Research Institute provides a rich milieu of faculty expertise, research seminars and other activities, and provides opportunities for undergraduate internships.

A hallmark of the Earth Systems Science major is its breadth and flexibility. Lower division coursework emphasizes foundation courses in physical, chemical and biological sciences and mathematics, with a choice of a lower division elective science course. A freshman seminar is designed to expose students to current topics, research and career opportunities in Earth Systems Science early in the program. Upper division requirements consist of four core courses that provide students with a balance of key physical, chemical and biological concepts in Earth Systems Science, including a field-intensive course that integrates these principles in practical applications and exercises. In the upper division, students select an emphasis area that allows exploration of a particular topical area in more depth. Selection of three courses from within an emphasis area allows each student to tailor their program to their individual interests. An upper division seminar highlights the latest research in interdisciplinary Earth Systems Science topics. General education coursework in communications, economics, ethics and public policy prepares majors to apply their quantitative science skills in the job market or in further studies at the graduate level. Students are encouraged to participate in research, internship and service learning activities with faculty as part of their undergraduate studies.

Transfer Students. Transfer students who wish to major in Earth Systems Science should complete one year of calculus, one year of physics, one year of general chemistry, one to two semesters of organic chemistry and two to three semesters of general biology or Earth or environmental science courses. Students should check with the UC Merced admissions staff for more information on how courses will transfer to UC Merced.

REQUIREMENTS FOR THE EARTH SYSTEMS SCIENCE (ESS) MAJOR

In **addition** to adhering to the UC Merced and School of Natural Sciences requirements, the additional requirements that must be met to receive the B.S. in Earth Systems Science at UC Merced are:

Earth Systems Science Requirements (54-57 units): The Earth Systems Science program consists of a minimum of 15 courses (8 lower division and 7 upper division) designed to give all students a common foundation of core knowledge specific to the discipline.

Lower Division Major Requirements

• Introduction to Earth Systems Science (ESS 1),
Introduction to Biological Earth Systems (ESS 5), or
Contemporary Biology (BIS 1) 4 units
• Fundamentals of Earth Processes (ESS 20) 4 units
Principles of Organic Chemistry (CHEM 8) 4 units

One additional science or engineering course from the following list (other courses by approval):

•	Introduction to Ecosystem Science (ESS 25) 4 units
•	Principles of Physical Chemistry (CHEM 10) 4 units
•	Introduction to Environmental Science and Technology (ENVE 20)4 units
•	Calculus of a Single Variable II (MATH 22) 4 units
•	Linear Algebra and Differential Equations (MATH 24) $\dots.3$ units
•	Introductory Physics II (PHYS 9) 4 units
•	Introduction to Computing II (CSE 21) \hdots

Upper Division Major Requirements

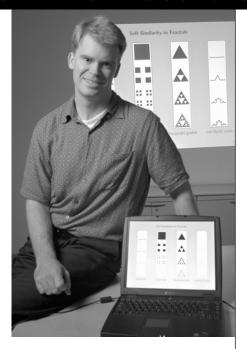
• Environmental Chemistry (ESS 100) 4 units
• Hydrology and Climate (ESS 110) 4 units
• Geomicrobiology (ESS 120) 4 units
• Field Methods in Earth Systems (ESS 180) 4 units

Emphasis Track

•	Three courses	from emphasis	track	9-12	unit unit
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SCHOOL OF NATURAL SCIENCES

Natural Sciences Professor Kevin Mitchell offers insights into fractals.



Emphasis Track course should be chosen from the following list (other courses by approval) Geochemistry and Biogeochemistry

\bullet Chemical Processes in the Soil Environment (ESS 102) 3 units
• Geochemistry of Earth Systems (ESS 103) 3 units
• Organic Geochemistry (ESS 104)
• Watershed Biogeochemistry (ESS 105)3 units
• Microbial Ecology (ESS 125)
• Air Pollution and Resources (ESS 134)
• Environmental Microbiology (ENVE 121)4 units

Hydrologic and Climate Sciences

,
• Watershed Biogeochemistry (ESS 105)3 units
• Ecology and Ecosystems (ESS 124) 4 units
• Subsurface Hydrology (ENVE 112) 4 units
• Mountain Hydrology of the Western U.S. (ENVE 114)4 units
• Global Change (ENVE 118) 4 units
• Meteorology and Air Pollution (ENVE 130) 4 units
• Contaminant Fate and Transport (ENVE 170)3 units

Ecosystem Science

• Ecology and Ecosystems (ESS 124)
• Microbial Ecology (ESS 125) 4 units
• Environmental Genomics (ESS 126) 4 units
• Theoretical Ecology (ESS 128) 4 units
• Environmental Microbiology (ENVE 121) 4 units
• Geomorphology and Surface Processes (ESS 150) 4 units
• Remote Sensing of the Environment (ENVE 152) 3 units
• Evolution (BIS 141)

• Watershed Biogeochemistry (ESS 105) 3 units

Atmospheric Sciences

• Research and/or Service Learning

• Atmospheric Chemistry and Physics [ESS 131] 4 units
• Climatology [ESS 132]
• Air Pollution and Resources [ESS 134]
Global Change [ENVE 118]
Meteorology and Air Pollution [ENVE 130] 4 units
Additional Degree Requirements (19-27 units)
• • • • • • • • • • • • • • • • • • • •
• Intermediate Microeconomic Theory (ECON 100) 4 units
 Intermediate Microeconomic Theory (ECON 100) 4 units Undergraduate Seminar (ESS 190) 1 unit
• • • • • • • • • • • • • • • • • • • •
• Undergraduate Seminar (ESS 190) 1 unit
 Undergraduate Seminar (ESS 190)



The research station at Wawona in Yosemite National Park is a valuable resource for field research.

PARTNERSHIP WITH KINGS CANYON, SEQUOIA AND YOSEMITE NATIONAL PARKS

On June 17, 2004, UC Merced signed a second five-year partnership agreement for education and research with Sequoia/Kings Canyon and Yosemite National Parks. In cooperation with schools in the San Joaquin Valley, the partnership has been sponsoring summer environmental education programs for high school students. With the dedication of the Sierra Nevada Research Institute Yosemite Field Station (picture above), the partnership has kicked off a new phase of research collaboration that will advance scientific and cultural understanding, meet regional needs and enrich university and public education. An affiliated research station in Sequoia/Kings Canyon is also planned.

SAMPLE PLAN OF STUDY FOR EARTH SYSTEMS SCIENCE DEGREE

SEMESTER 1	SEMESTER 2
*ICP 1 Integrated Calculus and Physics I8	Lower Division Science Course
CORE 1 The World at Home	CHEM 2 General Chemistry
Computer Science Course	MATH 22 Calculus of a Single Variable II
	CSE 21 Introduction to Computing II
	ESS 90x Freshman Seminar
Semester Units 14	Semester Units 15
SEMESTER 3	SEMESTER 4
PHYS 9 Introductory Physics II	ESS 20 Fundamentals of Earth Processes
CHEM 8 Principles of Organic Chemistry	MATH 24 Linear Algebra and Differential Equations
MATH 32 Probability & Statistics	Lower Division Science Course
WRI 10 College Reading and Composition4	General Education Elective
Semester Units 15	Semester Units 15
SEMESTER 5	SEMESTER 6
ESS 110 Hydrology and Climate	ESS 120 Geomicrobiology
ESS 180 Field Methods in Earth Systems4	ESS 100 Environmental Chemistry
General Education Elective (w/emphasis. on communication)4	CORE 100 The World at Home
ECON 100 Intermediate Microeconomic Theory	Upper Division NS or Engineering Elective4
Semester Units 16	Semester Units 16
SEMESTER 7	SEMESTER 8
ESS Emphasis	ESS Emphasis
ESS Emphasis	Free Elective or Research
General Education (Policy and Ethics) Elective4	General Education Elective
Upper division NS or Engineering Elective4	Upper Division NS or Engineering Elective4
ESS 190 Undergraduate Seminar	Service Learning
Semester Units 16	Semester Units 16
	Total Program Units 123



* Can substitute MATH 21 Calculus of a Single Variable I (4 units) and

PHYS 8 Introductory Physics I (4 units)

Natural Sciences Professor Peggy O'Day in her UC Merced Castle lab.

HUMAN BIOLOGY PROGRAM

The Human Biology major will provide students with a rich education in the scientific and humanist disciplines that underlie modern health sciences. This major is an excellent preparation for entrance into health related professional careers including medicine, dentistry, pharmacy, genetic counseling, health education, public health, clinical psychology, epidemiology, environmental health sciences and health administration, among others. The Human Biology major will also provide a strong foundation for careers in science and biomedical research.

The undergraduate Human Biology major is a highly interdisciplinary and broad-based program that integrates biology, social sciences and humanities. This major builds upon the powerful convergence linking genomics and molecular biology to our understanding and treatment of human health and disease. The breadth of the program gives students interested in health professions a well-rounded appreciation of the cultural and psychological influences on patient health, as well as a strong foundation in the physical and life sciences.

Students considering a Human Biology major will meet with an advisor and choose a curriculum based upon his/her interests and requirements for graduate or professional school goals. The undergraduate major in Human Biology currently offers two emphasis tracks: Economics and Psychology/Cognitive Sciences. The Human Biology major has a strong foundation in biology, including courses required for medical schools and other biomedical professional schools. The emphasis tracks add both lower and upper division economics or psychology/cognitive science courses. Both tracks allow a significant flexibility in choosing courses.

Undergraduate Major in Human Biology Research

Requirement. As a capstone to the Human Biology Program and to integrate the background students will have obtained in their first five semesters of separate courses in natural science and social science, all Human Biology majors will participate in a research project that links biology and the social sciences. This will involve having their independent laboratory research courses jointly mentored by biology and social science faculty members. In the Spring Semester of their junior year, students will attend presentations of faculty research. The students will then meet in groups with a biologist and social scientist to plan their senior year research project. The final student research seminar will also be a joint course from the Schools of Natural Sciences and Social Sciences, Humanities and Arts. Examples of research areas would be in epidemiology (sociology and biology) or neurobiology (psychology/cognitive science and biology) or health care policy (economics or public policy and biology).

Transfer Students. Transfer students who wish to major in Human Biology should complete one year of calculus, one year of physics, one year of general chemistry, at least one semester of organic chemistry, two to three semesters of general biology and introductory psychology. Students should check with the UC Merced admissions staff for more information on how courses will transfer to UC Merced.

REQUIREMENTS FOR THE HUMAN BIOLOGY (HBIO) MAJOR

In **addition** to adhering to the UC Merced and School of Natural Science requirements, the additional requirements that must be met to receive the B.A. in Human Biology at UC Merced are:

Human Biology Requirements (54-61 units): The Human Biology major consists of 14 courses (6 lower division and 8 upper division) designed to give all students a common foundation of core knowledge specific to the discipline.

Lower Division Major Requirements

• Contemporary Biology (BIS 1) 4 units
• Principles of Organic Chemistry (CHEM 8) 4 units
• Principles of Physical Chemistry (CHEM 10) 4 units
• Mathematical Biology (MATH 30) or Calculus of a Single Variable II (MATH 22)
• Introduction to Psychology (PSY 1)
• Introduction to Economics (ECON 1) or Introduction to Cognitive Sciences (COGS 1)* 4 units
• Introductory Physics II (PHYS 9)

Upper Division Major Requirements

•	Molecular Machinery of Life (BIS 100) 4 units
•	The Cell (BIS 110)
•	Two electives from Biology course list 8 units
•	Two upper division NS/ENG electives, one of which must have a lab (can be additional BIS courses)7-10 units
•	Research Seminar (HBIO 190)1 unit
•	Research Projects in Human Biology (HBIO 195) 2-6 units

Emphasis Track.

There are two emphasis tracks: Economics and Psychology/Cognitive

Psychology/Cognitive Science (16 units):

•	Introduction to Cognitive Modeling (COGS 102)	4ι	units
•	Three electives from Psychology/Cognitive		
	Sciences course list	2ι	units

Ec	onomics (16 units):
•	Intermediate Microeconomics (ECON 100)4 unit
•	Econometrics (ECON 130)
•	Health Economics (ECON 145) 4 units
•	Political Economics (ECON 155)

Biology electives (at least 2) should be chosen from the following list:

• Biochemistry (BIS 101) + Biochemistry Lab (BIS 101L)5 units

• Molecular Biology (BIS 102)
• Biophysics (BIS 104) + Biophysics Laboratory (BIS 104L)5 units
• Enzymology (BIS 105)
• Cells, Tissues and Organs (BIS 111)4 units
\bullet Signal Transduction and Growth Control (BIS 112) \ldots .4 units
• General Microbiology (BIS 120)
• Microbial Pathogenesis (BIS 122)4 units
• Human Parasitology (BIS 123) 4 units
• Emerging Public Health Threats (BIS 125)4 units
• General Virology (BIS 127) 4 units
• Genetics (BIS 140) 4 units
• Evolution (BIS 141)

•	Comparative Genomics (BIS 142) +
	Comparative Genomics Lab (BIS 142L)5 units
•	Embryos, Genes and Development (BIS 150)4 units
•	Molecular Immunology (BIS 151) 4 units
•	Cancer Genetics and Tumor Biology (BIS 152)4 units
•	Comparative Physiology (BIS 160) 4 units
•	Human Physiology (BIS 161) + Human Physiology Lab (BIS 161L)4 units
•	Endocrinology (BIS 163) + Endocrinology Lab (BIS 163L) \dots 5 units
•	Neurobiology (BIS 170)
•	Biostatistics (BIS 175)
•	Mathematical Modeling for Biologists (BIS 180)4 units

sychology and Cognitive Science electives (at least 3 should e chosen from the following list):
Physiological Psychology (PSY 120)
Cognitive Psychology (PSY 121) 4 units
Developmental Psychology (PSY 130) 4 units
Personality (PSY 132)
Abnormal Psychology (PSY 133) 4 units
Clinical Psychology (PSY 140) 4 units
Human Sexuality (PSY 145)4 units
Alcohol, Drugs and Behavior (PSY 146)4 units
Mind, Brain and Computation (COGS 101)4 units
Introduction to Neural Networks in
Cognitive Science (COGS 103) 4 units



UC Merced graduate students in environmental chemistry at work in the field.

SAMPLE PLAN OF STUDY FOR HUMAN BIOLOGY DEGREE - PSYCHOLOGY/COGNITIVE SCIENCE EMPHASIS

SEMESTER 1	SEMESTER 2
BIS 1 Contemporary Biology4	MATH 21 Calculus of a Single Variable I4
CHEM 2 General Chemistry4	CHEM 8 Principles of Organic Chemistry*
CORE 1 The World at Home4	PSY1 Introduction to Psychology4
Freshman Seminar	General Education Elective
Semester Units 13	Semester Units 16
SEMESTER 3	SEMESTER 4
BIS 100 Molecular Machinery of Life	BIS 110 The Cell4
CHEM 10 Principles of Physical Chemistry	MATH 32 Probability & Statistics
MATH 30 Mathematical Biology@	PHYS 8 Introductory Physics I
WRI 10 College Reading and Composition	COGS 1 Introduction to Cognitive Science
	Computer Science Course
Semester Units 16	Semester Units 17
SEMESTER 5	SEMESTER 6
BIS Elective4	BIS Elective4
PHYS 9 Introductory Physics II	PSY/COGS Elective
General Education Elective (w/emphasis on communication)4	CORE 100 The World at Home4
COGS 102 Introduction to Cognitive Modeling4	PSY/COGS Elective
	HBIO 195 Research Projects in Human Biology#
Semester Units 16	Semester Units 17
SEMESTER 7	SEMESTER 8
NS/ENG Elective	NS/ENG Elective w/Lab
PSY/COGS Elective4	Non-science or engineering course
General Education Elective	General Education Elective
Free Elective4	HBIO 195 Research Projects in Human Biology#
	HBIO 190 Research Seminar
Semester Units 16	Semester Units 14
	Total Program Units 125
	# In the first semester of Research Projects in Human Biology we recommend that students attend presentations of the faculties of Natural Sciences and Social Sciences that will participate in HBIO research training
	* Students interested in medical school should take a second semester of organic chemistry
	@ Calculus of a Single Variable II (MATH 22) may be substituted for MATH 30

SAMPLE PLAN OF STUDY FOR HUMAN BIOLOGY DEGREE - ECONOMICS EMPHASIS

SEMESTER 1	SEMESTER 2
BIS 1 Contemporary Biology	MATH 21 Calculus of a Single Variable I
CHEM 2 General Chemistry	CHEM 8 Principles of Organic Chemistry*
CORE 1 The World at Home4	PSY1 Introduction to Psychology
Freshman Seminar	General Education Elective
Semester Units 13	Semester Units 10
SEMESTER 3	SEMESTER 4
BIS 100 Molecular Machinery of Life4	BIS 110 The Cell
CHEM 10 Principles of Physical Chemistry	MATH 32 Probability & Statistics
MATH 30 Mathematical Biology@	PHYS 8 Introductory Physics I
WRI 10 College Reading and Composition	ECON 1 Introduction to Economics
	Computer Science Course
Semester Units 16	Semester Units 1
SEMESTER 5	SEMESTER 6
BIS Elective4	BIS Elective
ECON 100 Intermediate Microeconomic Theory	ECON 145 Health Economics
General Education Elective (w/emphasis. on communication)4	CORE 100 The World at Home
PHYS 9 Introductory Physics II	ECON 130 Econometrics
	HBIO 195 Research Projects in Human Biology#
Semester Units 16	Semester Units 1
SEMESTER 7	SEMESTER 8
NS/ENG Elective	NS/ENG Elective w/Lab
ECON 155 Political Economics	Non-science or engineering course
General Education Elective	General Education Elective
General Education Elective	HBIO 195 Research Projects in Human Biology
	HBIO 190 Research Seminar
Semester Units 16	Semester Units 14

^{*} Students interested in medical school should take a second semester of organic chemistry

[@] Calculus of a Single Variable II (MATH 22) may be substituted for MATH 30

he educational mission of our school is to create a rich learning environment by looking at people and society through the lenses of the many disciplines known as the social sciences, humanities and the arts. As a new campus, UC Merced has the singular opportunity to foster an integrative environment that draws from these disciplinary research traditions, but is not limited by their boundaries. Consider these two examples:

Imagine the question: "What is a metaphor?"

Poets and novelists use metaphor to evoke vivid images in their readers. Scientists rely on Humanities and Arts metaphor to make leaps in discovery and the-



Kenji Hakuta, Dean School of Social Sciences,

ory. Teachers use metaphor to explain logarithmic functions, quasars and other relatively abstract phenomena. Politicians employ metaphor to frame issues and influence public policy. We all use metaphor in our daily conversations and writing, and often we are not even aware of it. Our interdisciplinary programs will allow students to explore the meaning, use and power of metaphors across several disciplines, including psychology, cognitive science, literature, art, history, philosophy and public policy. What does metaphor say about everyday thought? How does it influence society?

Imagine the question: "What is social change?"

Throughout human history, peoples have created new societies, regimes and systems of belief. Social change can be studied at a global scale over thousands of years, yet California's Central Valley is also a laboratory for understanding these issues. Agricultural fields that replaced meadow land only a hundred years ago are being converted to housing and industry. Explosive population growth is fundamentally transforming the local economy, while at the same time pressuring the capacity of public infrastructure and social services. In order to understand changes like these, students need to step away from thinking of economics and business, history, sociology, government, biology and geography as a set of simple, separate disciplines. Instead, students need to learn to integrate key ideas and interdisciplinary tools to understand all the dimensions of a given issue. How can a diverse society use these insights to make better decisions?

The School of Social Sciences, Humanities and Arts offers undergraduate and graduate programs that allow flexible courses of study and opportunities for research at the intersections where the interesting questions lie. Students will have the opportunity to follow personal paths of discovery in interdisciplinary curricula, while at the same time gaining depth and expertise in methodological domains such as social statistics, historiography, GIS, economics, cultural analysis and cognitive science.

Educational Philosophy

Our educational philosophy can be captured by the following principles which guide the way that the School of Social Sciences, Humanities and Arts constructs an interdisciplinary learning foundation for our students:

Doing is the basis for learning. Students are encouraged to create the forms they are studying -- whether they are plays, maps, persuasive essays or social surveys. We believe that developing writing skills leads to critical read-

WELCOME FROM THE DEAN

Dear Prospective Student,

I would like to extend an invitation to study in the School of Social Sciences, Humanities and Arts at UC Merced. Our professors are specialists in many disciplines, from economics to the creative arts. They are among the very best scholars in the world and have joined us to create exciting new programs that appeal to our leaders of the future.

We will start as a small learning environment in which you will get to know amazing faculty on a first-name basis, a rare opportunity to enjoy the intimacy of a small college and the advantages of a research university. We invite you to be part of UC Merced's founding experiment!

Kenji Hakuta, Dean School of Social Sciences. Humanities and Arts

ing; being an articulate speaker leads to becoming a better listener; and developing models of decision-making from a holistic multidisciplinary perspective leads to a better appreciation of how policy is developed. We invite students to participate in the research programs of our faculty, to create student-led teams and to embark on individual mentored research projects. Through their research, students will learn to evaluate and use evidence and construct persuasive arguments based upon actual events and previous experience.

Learning is ubiquitous. Some of the best learning occurs out of the classroom around peers and in communities. Diverse learning environments allow students to make connections between books and the world. Human beings are natural learners, and our job as educators is to provide an environment where students can engage these natural instincts. Courses are the anchors, but a lot of exciting discoveries depend upon students' own discovery of the links between formal academic programs and other endeavors such as foreign travel, artistic performance, political or business internship or community service.

All politics is local. When we develop an informed and critical engagement with our own community, we can make better sense of what is happening there, and we can begin to see how our home is related to the globe. We live in a world where we are globally interdependent. Political borders, which change over time, determine citizenship and affect life opportunities. Ideas, diseases, languages, goods and individuals have always moved around the region and the world, but they do not reach all destinations with equal ease; they do not have equivalent effects when they alight in different places; and they are transformed by their new environments. Jobs lost in the Central Valley may be gained in Asia, Latin America or Nevada and vice versa. Central Valley cotton may be shipped to India to be made into fabric, assembled into clothing in Guatemala and then shipped back to local stores for sale. Music and art can cross borders at a rate limited only by the speed of the internet. We envision our community of students as developing a zone of comfort that allows them to act simultaneously as local and global citizens.

Culture, society and artistic expression differ widely on the basis of their historical era and geographical location. Individuals and their cultures are affected by diverse natural environments, the changing ways in which the world has been measured and envisioned and the legacies of contacts, migrations or isolation. As students learn to understand the ways that time and place have shaped lifeways, institutions and works of the imagination, they will develop perspectives that enable them to be better able to understand and shape our futures.

SCHOOL OF SOCIAL SCIENCES, HUMANITIES AND ARTS REQUIREMENTS

All School of Social Sciences, Humanities and Arts students, regardless of major, are expected to meet the minimum requirements for the BA degree. The School of Social Sciences, Humanities and Arts degree requirements are:

At least 120, but not more than 128 semester units to include the following:

- At least 45 general education semester units.
- At least 60 semester units of upper division courses.

General Education Requirements (48 units). Students in the School of Social Sciences, Humanities and Arts are required to complete the following list of general education courses:

Lower Division General Education Requirements

College One Core Course sequence,

Students in the School of Social Sciences, Humanities and Arts will have a freshman year that lays the foundation for further study in the majors. Students will have the opportunity to explore the different UC Merced majors during that year through freshman seminars, research experiences and informal contact with faculty and graduate students. The first course of the Core Course sequence, CORE 1, The World at Home, is common for all UC Merced students. This course lays the foundation in skills and ideals articulated in the UC Merced Guiding Principles for General Education (see General Education section of this catalog). These include decision-making, communication, ethics, responsibility, leadership, teamwork, aesthetic understanding, creativity and an appreciation of diverse perspectives in both the global and community contexts. All UC Merced students will also take CORE 100, The World at Home, as a junior.

Major area upper division courses and emphasis track requirements are unique to each major. These are presented in the following section on Majors.

THE MAJORS

MANAGEMENT PROGRAM

The Management program will respond to the growing need of California industry, especially in the Central Valley. UC Merced's management education is interdisciplinary and consists of a blend of courses from the fields of economics, management theory and the social sciences. Real life management problems do not fit neatly into subject areas. Today's managers and economists tackle issues that involve a number of management functions - so solutions need to account for all the areas involved. The UC Merced approach is to step away from thinking of management and economics as a set of simple, separate disciplines. Instead, the students learn to integrate key ideas from across subject areas to understand all the dimensions of a given issue. Creativity, innovation and entrepreneurship are emphasized.

The Management major at UC Merced represents a unique hands-on approach to management development and economics, positioning courses at the leading edge of dynamic business performance. The practical and project-based approach is based on the principle that learning is more rewarding when put into practice. Expertise can be taught, yet skills development demands live employment in the real world of work. The major is based on the premise that organizations of different kinds – for-profit, non-profit, technological and governmental – require employees who are trained in analytical and quantitative decision-making, who work effectively in teams and on projects, who are comfortable in various cultures, are "well-rounded" in sciences and humanities, and who have learned the art of self-directed learning.

Using a multidisciplinary approach, the Management major prepares students for a broad range of management-related careers. The curriculum provides a strong foundation in economics, organization, business, finance, accounting and quantitative methods. UC Merced's Management program also emphasizes the historical and cultural dimensions of economics and management. It focuses on

SCHOOL OF SOCIAL SCIENCES, HUMANITIES & ARTS

analysis and problem solving across a wide spectrum of management activities. The theoretical underpinning for the undergraduate program comes from Economics and Management Science disciplines that use tools and techniques based on applied mathematics and statistics to solve problems in virtually all areas of business and government. The typical undergraduate student will develop skills to build quantitative models of complex operations and be able to use those models to facilitate decision-making.

The Management degree provides students with the analytical tools to operate successfully in a modern, volatile business environment. The core management courses provide a rigorous foundation in economics, organizations, finance, accounting and psychology.

Students who graduate with a major in Management will be able to:

- Analyze information, solve problems and make decisions from a multidisciplinary perspective
- Apply theories and concepts from management and related fields (for example, economics, accounting, statistics and finance) to various management situations
- Use effective written and oral communication consistent with the management and professional environment
- Apply appropriate information technology to analyze problems, develop business research, report key data and recommend management strategies and actions
- Evaluate ethical, social, cultural and political issues as they relate to the organization, operations, human resources and business ventures.

Transfer Students. Transfer students who wish to major in Management should complete the Intersegmental General Education Transfer Curriculum (IGETC) at their community college. In addition, students should complete at least two UC-transferable introductory courses, one each selected from humanities/arts and psychology; two lower division natural science or engineering courses, at least one of which has a lab, field, or studio component; principles of economics and accounting; and a two-course UC transferable sequence in calculus.

REQUIREMENTS FOR THE MANAGEMENT (MGMT) MAJOR

In **addition** to adhering to the UC Merced and School of Social Science, Humanities and Arts requirements, the additional requirements that must be met to receive the B.A. in Management at UC Merced are:

Management Course Requirements. The Management major requires 47 units (some of which simultaneously fill general education requirements). Courses in the major emphasis must be taken for a letter grade and specifically may not be taken on a pass/no pass basis unless the course is only offered on a pass/no pass basis. Required courses include:



Psychology professor Will Shadish's door is always open to students.

Lower Division Major Requirements:

• Case Study Seminar on Business and Management (MGMT 2)
• Introduction to Finance and Accounting I and II (MGMT 25 and 26)
• Introduction to Economics (ECON 1) 4 units
• Analysis of Economic Data (ECON 10) * 4 units
• Introduction to Psychology or Cognitive Science
(PSY 1 or COGS 1)*4 units
• Calculus of a Single Variable I (MATH 21) 4 units
 Management Information Systems (MIS) or
Computer Science course#
Upper Division Major Requirements:
• Intermediate Microeconomic Theory (ECON 100) 4 units
• Intermediate Macroeconomic Theory (ECON 101) 4 units
• Econometrics (ECON 130) 4 units

Additional requirements: Students are required to take at least 16 semester units of upper division elective economics or management courses that should be selected to provide depth in a specific management area, such as personnel economics, finance, strategy, industrial organization or regulatory policy.

• Financial Economics (ECON 162) 4 units

• Industrial and Organizational Psychology (PSY 141) * 4 units

See website for specific course numbers and descriptions

* Can satisfy general education requirement

SAMPLE PLAN OF STUDY FOR MANAGEMENT DEGREE

SEMESTER 1	SEMESTER 2
CORE 1 The World at Home	Elective
ECON I Introduction to Economics	Introductory WCH or Arts course
WRI 10 College Reading & Composition	Nat Sci/Engin w/Lab/Field Work/Studio
MATH 21 Calculus of a Single Variable I	PSY 1 or COGS 1 Introduction to Psychology or Cognitive Science4
Semester Units 16	Semester Units 16
SEMESTER 3	SEMESTER 4
ECON 100 Intermediate Microeconomic Theory	Elective
Natural Science/Engineering course	ECON 10 Analysis of Economic Data#
MGMT 2 Case Study Seminar on Business and Management .1	MIS or CSE course\$
MGMT 25 Introduction to Finance and Accounting I 3	MGMT 26 Introduction to Finance and Accounting II
Semester Units 12	Semester Units 15
SEMESTER 5	SEMESTER 6
Elective	Upper division Economics or Management elective 2
ECON 101 Intermediate Macroeconomic Theory4	ECON 162 Financial Economics
Upper division GE course outside Management 14	Upper division GE course outside Management 24
Upper division Economics or Management elective 1	CORE 100 The World at Home
Semester Units 16	Semester Units 16
SEMESTER 7	SEMESTER 8
ECON 130 Econometrics	Upper division GE Course outside Management 3
PSY 141 Industrial and Organizational Psychology *4	Upper division Economics or Management elective 4
Upper division Economics or Management elective 3 4	Free Elective
Free elective	Free Elective
Semester Units 16	Semester Units 16
	Total Program Units 123
	* Counts toward upper division GE course requirement outside of Management.
	# Counts toward GE quantitative analysis requirement

^{\$} See Dean's Office for approved list of MIS or CSE courses

SOCIAL AND COGNITIVE SCIENCES PROGRAM

The undergraduate major in Social and Cognitive Sciences will offer broad preparation that cuts across Economics, Psychology, Political Science, Public Policy, Sociology and Anthropology. Introductory coursework will lay the basis for understanding the major questions and methodologies across the Social and Cognitive Sciences, including a common core of statistical and experimental methods courses. Upper division courses and projects will allow students to synthesize their cross-discipline learning and experiences.

Within this broad framework, three emphases will be developed within the initial program: Psychology, Economics and Public Policy. Students will select one of these emphases and will receive a notation on their transcript and diploma. Other emphases will be developed as the faculty and program enrollments grow.

The Psychology emphasis will provide broad preparation in psychology as a field and in the research methodologies of psychology. Special emphases will include human development (biological and cognitive) and social psychology. Cross-school programs will emphasize the intersections of psychology with the biological sciences through programs in Human Biology. Emphases in human development and social psychology will include multicultural perspectives. Psychology emphasis students will have opportunities to work with faculty on research.

Built on a basis of strong theoretical and statistical training, the Economics emphasis will give students a solid grounding in economic theory and quantitative methods. The Economics emphasis will provide students with an understanding of how incentives and institutions shape society. Special emphases will include labor economics, public economics, environmental economics, political economy and quantitative methods. Opportunities to do research with faculty will also be available.

The Public Policy emphasis provides an interdisciplinary education that prepares students for leadership positions in analyzing, implementing and managing public policies. The emphasis prepares students to apply the knowledge and tools from various academic disciplines, spanning such diverse fields as economics, political science, psychology, engineering and biology. Students will choose an area of emphasis within the program from social policy, health policy or environmental policy. The program focuses on the challenging policy issues of today and strives to prepare students to understand and to solve the emerging problems of tomorrow. As one of the best ways to learn is by doing, students will participate in an internship and/or an independent research project.

Depending upon their emphasis within Social and Cognitive Sciences, students will be well prepared for advanced study in law, management, public policy, urban and regional planning and medicine; or for admission into graduate school in one of the social science emphasis fields. Career paths include business; social services agencies; federal, state and local government service; non-governmental organizations and non-profit agencies; community development; and counseling and training programs.

REQUIREMENTS FOR THE SOCIAL AND COGNITIVE SCIENCES (SCS) MAJOR

In **addition** to adhering to the UC Merced and School of Social Science, Humanities and Arts requirements, the additional requirements that must be met to receive the B.A. in Social and Cognitive Sciences at UC Merced are:

Social and Cognitive Sciences Course Requirements.

The Social and Cognitive Sciences major requires 44 units (some of which simultaneously fill general education requirements). Courses in the major emphasis must be taken for a letter grade and specifically may not be taken on a pass/no pass basis unless the course is only offered on a pass/no pass basis. Required courses include:

Lower Division Major Requirements [12 units]:

• Introduction to the Social and Cognitive Sciences 8 units

Two courses chosen from:

- Introduction to Cognitive Science (COGS 1)
- Introduction to Economics (ECON 1)
- Introduction to Psychology (PSY 1)
- Introduction to Political Science (POL 1)
- Introduction to Public Policy (PUBP 1)
- Introduction to Sociology (SOC 1)
- Quantitative Methods 4 units

One course chosen from:

- Psychology emphasis Analysis of Psychological Data (PSY 10)
- Economics emphasis Analysis of Economic Data (ECON 10)
- Public Policy emphasis students can choose either PSY 10 or ECON 10 (Counts toward the General Education Quantitative Requirement)

Upper Division Major Requirements [32 units] Economics emphasis:

Psychology emphasis:

- - Group A (Cognition, Brain and Behavior):
 PSY 120, 121, or any upper division COGS course
 - Group B (Social-Personality, Development): PSY 130, 131, 132, 133
 - Group C (Applied Psychology):
 PSY 140, 141, 145, 146, SCS 140, SCS 145

Public Policy emphasis:

- PUBP 1: Introduction to Public Policy 4 units
- PUBP 100: Political Process and Institutions 4 units
- ECON 100: Intermediate Microeconomic Theory 4 units
- Research Methods choose between Research Methods in Psychology (PSY 105) or Econometrics (ECON 130) 4 units
- - Social Policy Poverty and Social Policy (PUBP 110), Immigration and Public Policy (PUBP 140), Race, Ethnicity and Public Policy (PUBP 150), Labor Economics (ECON 140), Development Economics (ECON 150), Political Economics (ECON 155), Social Psychology (PSY 131), Developmental Psychology (PSY 130), Psychological Perspectives on Cultural, Racial and Ethnic Diversity (PSY 150), Second Language Learning and Bilingualism (SCS 145).
 - Health Health Care Policy (PUBP 120), Health Economics (ECON 145), Public Finance (ECON 151), Political Economics (ECON 155), Social Psychology (PSY 131), Developmental Psychology (PSY 130), Human Sexuality (PSY 145), Alcohol, Drugs and Behavior (PSY 146), Psychological Perspectives on Cultural, Racial and Ethnic Diversity (PSY 150).

Additional courses in Natural Sciences or Engineering may be taken to meet the **Health Care Policy** area of study with the consent of the instructor and the Public Policy Program. Please consult the SSHA advisor and/or visit SSHA's website for a list of approved courses.

 Environment – Environmental Policy (PUBP 130), Environmental Economics (ECON 120), Law and Economics (ECON 152), Political Economics (ECON 155), Topics in Environmental History (HIST 135). Additional courses in Natural Science or Engineering may be taken to meet the **Environmental Policy** area of study with the consent of the instructor and the Public Policy Program. Please consult the SSHA advisor and/or visit SSHA's website for a list of approved courses.

• Directed Research in Public Policy
(Internship and/or Independent Study) 4 units

Students must enroll in Individual Internship (PUBP 196) or Upper Division Individual Study (PUBP 199) and complete an original policy research paper. Students must have a faculty advisor in order to enroll in either course. Once the required units are satisfied, Public Policy students can take either course as an elective without a major research paper.

Transfer Students. Transfer students who wish to major in Social and Cognitive Sciences should complete the Intersegmental General Education Transfer Curriculum (IGETC) at their community college. In addition, students should complete at least two UC-transferable introductory courses, one each selected from psychology and economics, and two lower division natural science or engineering courses, at least one of which has a lab, field or studio component. Students interested in the Economics or Public Policy emphasis should also take a two-course UC transferable sequence in calculus.

Philosophy faculty member Jeff Yoshimi encourages UC Merced students to achieve philosophical heights and let their spirits soar.



SAMPLE PLAN OF STUDY FOR SCS DEGREE - ECONOMICS EMPHASIS

SEMESTER 1	SEMESTER 2
CORE 1 The World at Home4	Elective4
ECON 1 Introduction to Economics	MATH 21 Calculus of a Single Variable I
WRI 10 College Reading & Composition4	Nat Sci/Engin w/Lab/Field Work/Studio
Elective	Elective4
Semester Units 16	Semester Units 16
SEMESTER 3	SEMESTER 4
Introductory SCS course outside Economics	Introductory WCH or Arts course4
Natural Science/Engineering course	General Education Elective
ECON 10 Analysis of Economic Data	Elective
Elective4	Elective
Semester Units 16	Semester Units 16
SEMESTER 5	SEMESTER 6
ECON100 Intermediate Microeconomic Theory4	ECON 101 Intermediate Macroeconomic Theory
Upper Division ECON course4	Upper Division ECON course
Upper Division course outside Economics	Upper Division course outside Economics
Elective4	CORE 100 The World at Home4
Semester Units 16	Semester Units 16
SEMESTER 7	SEMESTER 8
Upper Division ECON course4	Upper Division ECON course4
Upper Division course outside Economics	Upper Division ECON course4
ECON 130 Econometrics4	Upper Division course outside Economics
	Elective
Elective	

SAMPLE PLAN OF STUDY FOR SCS DEGREE - PSYCHOLOGY EMPHASIS

	Total Program Units 12
Semester Units 16	Semester Units 1
Elective4	Elective
Elective	Elective
Upper Division course outside PSY/COGS	Upper Division course outside PSY/COGS
PSY Group C course4	Upper Division PSY/COGS course
SEMESTER 7	SEMESTER 8
Semester Units 16	Semester Units 1
Elective	PSY Group B course
Upper Division course outside PSY/COGS	Upper division course outside PSY/COGS
Upper Division course in PSY/COGS	Upper Division PSY/COGS course
PSY Group A course4	CORE 100 The World at Home
SEMESTER 5	SEMESTER 6
Semester Units 16	Semester Units 1
Elective	
Cultural, Racial and Ethnic Diversity	Elective
PSY 150 Psychological Perspectives on	Elective
Natural Science/Engineering course	PSY 105 Research Methods in Psychology
Introductory SCS course outside emphasis4	Introductory WCH or Arts course
SEMESTER 3	SEMESTER 4
Semester Units 16	Semester Units 1
Elective4	Elective
WRI 10 College Reading & Composition4	Nat Sci/Engin w/Lab/Field Work/Studio
PSY 1 Introduction to Psychology	Elective
CORE 1 The World at Home4	PSY 10 Analysis of Psychological Data

SAMPLE PLAN OF STUDY FOR SCS DEGREE - PUBLIC POLICY EMPHASIS

SEMESTER 1	SEMESTER 2
CORE 1 The World at Home4	PUBP 1 Introduction to Public Policy
ECON 1 Introduction to Economics	MATH 21 Calculus of a Single Variable I
WRI 10 College Reading & Composition	Nat Sci/Engin w/Lab/Field Work/Studio
Elective	Elective
Semester Units 16	Semester Units 16
SEMESTER 3	SEMESTER 4
Introductory WCH or Arts course	Introductory SCS course outside emphasis
Natural Science/Engineering course	ECON 10 Analysis of Economic Data or PSY 10
ECON 100 Intermediate Microeconomic Theory	Analysis of Psychological Data
Elective	POL 1 Introduction to Political Science
	Elective
Semester Units 16	Semester Units 16
SEMESTER 5	SEMESTER 6
PUPB 100 Political Process and Institutions4	CORE 100 The World at Home
Upper Division course outside Public Policy4	Upper Division PUBP course
ECON 130 Econometrics or PSY 105	Upper Division course outside Public Policy
Research Methods in Psychology	Elective
Elective	
Semester Units 16	Semester Units 16
SEMESTER 7	SEMESTER 8
Upper Division PUBP course	Upper Division PUBP course
Upper Division course outside Public Policy4	Upper Division course outside Public Policy
Directed Research in Public Policy*4	Elective
Elective	Elective
Semester Units 16	Semester Units 16
	Total Program Units 128

^{*}This can be satisfied by either PUBP 196 or PUBP 199.

WORLD CULTURES AND HISTORY PROGRAM

The undergraduate major in World Cultures and History will invite students to study questions of society and culture in a comparative context. It will address such questions as: What constitutes a society and a culture, and how are they formed? How and why do societies and cultures sometimes come into conflict? What happens at the crossroads of culture—for example, California and the San Joaquin Valley—when people from many different backgrounds come into contact?

These questions can best be understood through the prism of the humanities and arts, assisted by the natural and social sciences. Thus, this major will bring together a variety of disciplines previously thought of as dissimilar—including anthropology, history and political science, language and literature, music and performance studies, philosophy and religious studies and area and ethnic studies.

In UC Merced's opening years, the World Cultures and History major will particularly examine the interaction of nations and cultures from both a literary and an historical perspective. Within both these fields, lively scholarly debates on the subject of culture abound. This major will appeal to students who are interested in learning the methods and tools of history, literature and allied fields to understand how societies and cultures have developed and continue to evolve. A special feature of this major will give students the opportunity to apply their classroom learning to relevant and contemporary research problems outside the classroom, where students may contribute to expanding public knowledge and awareness of cultural issues.

Two emphases will be developed within the initial program: history or literature. Students will select one of these emphases and receive a notation to that effect on their transcript and diploma. Other emphases will be developed as the faculty and program enrollments grow.

The History emphasis will prepare students to understand and use the methods by which historians examine society and culture, through historical research and writing. Students will learn to locate, evaluate and interpret evidence, and then use that evidence to construct an argument or develop a thesis, using both historical case studies and comparative studies. Students will explore history as a field, including the examination in depth of issues concerning world, national or state and local history. Initially, the history emphasis will focus on world history, American history and the history of science and technology.

The Literature emphasis will prepare students in the multiple perspectives from which literature as a product of culture is read. Students will learn how to interpret texts by applying different critical methods and hone their own interpretive skills through analysis and writing. Students will have the opportunity to take courses on a national tradition, transnational movements, historical periods, cultural

analysis, literary genres, women's and ethnic literatures, regional literatures, environmental writings and children's literature. Students will use this study to build written, oral and other communication skills. They will develop the ability to create well-crafted analyses for specialists in their field, as well as to interpret the results of their research and analyses for a non-specialist public.

During their undergraduate careers, World Cultures and History majors will have a variety of opportunities to apply what they are learning. Possibilities include undergraduate research with individual faculty; community or regional internships in a variety of cross-cultural settings; and enrichment experiences through the World Cultures Institute. The rich and diverse historical experiences and cultural heritages of California and the San Joaquin Valley offer an excellent living laboratory for this research.

A unique part of the World Cultures and History major will be a public research project that enables students to use their research and communication skills either individually or as part of a team to educate and inform the public. Students might work, for example, on researching and writing an interpretative account linking the environmental and human histories of nearby Yosemite or Sequoia National Park; or on representations through the arts of a San Joaquin Valley cultural group at a Valley museum; or on an aspect of irrigation history and water policy for a public agency in the Valley. The final product might be in the form of an interpretive web site that combines written and oral texts with visual material, an interpretive text for the public or a written and oral report to a sponsoring agency. Extensive writing will be a keystone of the World Cultures and History major, and a requirement of any public research project.

World Cultures and History majors may also elect to study overseas through the University of California Education Abroad Program (EAP) or participate in the University of California programs in Washington DC (UCDC) or Sacramento. To fulfill the public research project requirement, the EAP, UCDC or Sacramento experience would need to be planned under UCM faculty supervision and lead to completion of a final written report (for EAP students: in English or in the language of the EAP country) addressed to a well-defined public audience.

Students will also complete a two-semester senior proseminar in which they will explore connections among the World Cultures and History courses they have completed and write a senior thesis. The proseminar will require students to demonstrate their skills in communicating effectively both orally and in writing with an audience in their emphasis field. Semester one will focus on directed research in preparation for writing a senior thesis; semester two will be devoted to completing the thesis.

World Cultures and History students will be well-prepared to enter advanced study programs in law, education, journalism, diplomacy, library science and management, as well as graduate study in their field of emphasis. Career opportunities will be found in academe, business, publishing, public service, non-governmental organizations and at museums and archives. Public as well as private agencies seeking employees with strong cross-cultural communication skills and understanding should find graduates from this program especially appealing.

REQUIREMENTS FOR THE WORLD CULTURES AND HISTORY (WCH) MAJOR

In **addition** to adhering to the UC Merced and School of Social Science, Humanities and Arts requirements, the additional requirements that must be met to receive the B.A. in World Cultures and History at UC Merced are:

World Cultures and History Requirements: Students in the World Cultures and History major must complete at least 41 units in World Cultures and History courses, of which 8 units will be from lower division courses in the student's area of emphasis, 1-4 units will be a senior public research project and 8 units will be through senior proseminars. Courses in the major emphasis must be taken for a letter grade and specifically may not be taken on a pass/no pass basis unless the course is only offered on a pass/no pass basis. In addition to the emphasis areas of history and literature, World Cultures and History includes courses in anthropology, art and art history, languages (initially, Spanish) and philosophy. Required courses include:

Lower Division Major Requirements (32 units): A two-semester lower division introductory sequence in the student's intended area of emphasis:

History emphasis (one of the following combinations): 8 units

- Introduction to World History to 1500 (HIST 10) and Introduction to World History Since 1500 (HIST 11)
- The Forging of the United States, 1607-1877 (HIST 16) and The Modern United States, 1877-Present (HIST 17)

Or

Literature emphasis (one of the following combinations): . . . 8 units

- Introduction to World Culture and Literature I and II (LIT 20 and LIT 21)
- Introduction to American Literature I and II (LIT 30 and LIT 31)
- $\bullet\,$ Introduction to British Literature I and II (LIT 40 and LIT 41)
- Introduction to Hispanic Literature I and II (LIT 50 and LIT 51)

Check WCH website for most recent list of approved courses. Students may petition to substitute a suitable course in place of taking a course from the list included here.

History Professor Sean Malloy at Bobcat Day.

Upper Division Major Requirements (33-40 units): *History Emphasis:*

•	The Historian's Craft (HIST 100)	
	(must be taken in junior year)	nits
•	History electives	iits
•	One non-US History course 4 un	iits
•	World Cultures and History Proseminar: Research (WCH 190)	nits
•	World Cultures and History Proseminar: Senior Thesis (WCH 191)	nits
•	Public Research Project in World Cultures and History (WCH 192)	nits

Or

Literature emphasis:

- - Area A: Literatures and cultures of the Spanish Speaking world
 - Area B: Literatures and cultures of the Americas
 - Area C: Literatures and cultures of the English-speaking world (SPAN 100 and 101 may be used to meet requirements in either Area A or B.)
- Literature Electives8-12 units
- World Cultures and History Proseminar: Senior Thesis
- Public Research Project in World Cultures and History (WCH 192)1-4 units

Transfer Students. Transfer students who wish to major in World Cultures and History should complete the Intersegmental General Education Transfer Curriculum (IGETC) at their community college. In addition, students should complete at least two full-year UC-transferable introductory course sequences, one sequence selected from history and one from literature.



SAMPLE PLAN OF STUDY FOR WCH DEGREE - HISTORY EMPHASIS

SEMESTER 1	SEMESTER 2
CORE 1 The World at Home4	Nat Sci/Engin w/Lab/Field Work/Studio
Quantitative Reasoning Course#	Elective*4
WRI 10 College Reading & Composition4	Elective4
Introductory History Sequence I	Introductory History Sequence II
Semester Units 16	Semester Units 16
SEMESTER 3	SEMESTER 4
Introductory Literature or WCH Sequence I4	Introductory Literature or WCH Sequence II4
Introductory SCS course	LIT or WCH Upper Division Course4
Elective*	Elective*4
NS/ENG Introductory Course4	Elective
Semester Units 16	Semester Units 16
SEMESTER 5	SEMESTER 6
HIST 100 The Historian's Craft	CORE 100 The World at Home
Upper Division non-US HIST course4	Upper Division HIST Course
Elective	WCH 192 Public Research Project
Upper Division LIT or WCH course	Upper Division LIT or WCH course
Semester Units 16	Semester Units 16
SEMESTER 7	SEMESTER 8
WCH 190 Proseminar in World Cultures and History: Research 4	WCH 191 Proseminar in World Cultures and History:
Upper Division HIST course	Senior Thesis
History Elective	Upper Division HIST course
Upper Division Course outside History4	History Elective
	Upper Division Course outside History
Semester Units 16	Semester Units 16
	Total Program Units 128
	# Students who need to fulfill the foreign language requirement can take a foreign language course in Semester 1 and postpone the quanti- tative reasoning course until Semester 3.

^{*} Students who need to fulfill the foreign language requirement can take a foreign language course in place of an elective in Semesters 2, 3 and/or 4.

SAMPLE PLAN OF STUDY FOR WCH DEGREE - LITERATURE EMPHASIS

SEMESTER 1	SEMESTER 2
CORE 1 The World at Home4	Nat Sci/Engin w/Lab/Field Work/Studio
Introductory Literature Sequence I	Introductory Literature Sequence II
Quantitative Reasoning Course#	Elective*
WRI 10 College Reading & Composition4	Elective
Semester Units 16	Semester Units 16
SEMESTER 3	SEMESTER 4
Introductory History or WCH course	Introductory History or WCH course
Introductory SCS course	Elective*
Elective*	Elective
NS/ENG Introductory Course	Elective
Semester Units 16	Semester Units 1
SEMESTER 5	SEMESTER 6
LIT 100 Engaging Texts: Intro to Critical Practice4	CORE 100 The World at Home
Literature Area course	WCH 192 Public Research Project
Literature Elective	Literature Area course
Upper Division HIST or WCH course	Upper Division HIST or WCH course
Semester Units 16	Semester Units 1
SEMESTER 7	SEMESTER 8
WCH 190 Proseminar in World Cultures and History: Research 4	WCH 191 Proseminar in World Cultures and History:
Literature Area course	Senior Thesis
Literature Elective	Literature Elective
Upper Division course outside Literature4	Literature Elective
	Upper Division course outside Literature
Semester Units 16	Semester Units 1
	Total Program Units 12
	# Students who need to fulfill the foreign language requirement can



- # Students who need to fulfill the foreign language requirement can take a foreign language course in Semester 1 and postpone the quantitative reasoning course until Semester 3.
- * Students who need to fulfill the foreign language requirement can take a foreign language course in place of an elective in Semesters 2, 3 or 4.

The City of Livingston Valet Folkloric Group performs a traditional regional dance at Bobcat Day.



WELCOME FROM THE DEAN

Graduate education is an experience in learning the process of discovery. Be it in the laboratory, the field, a museum or library, students will learn how to identify, investigate and analyze major problems of importance to society. As a natural laboratory for research of international significance, California's San Joaquin Valley is defined by the diversity of its people and the proximity of the Sierra Nevada mountains. These elements offer a critical venue for a broad palette of studies that span the gamut from the humanities and social sciences to the natural and engineering sciences.

The University of California, Merced is building both a world-class faculty and world-class partnerships with Yosemite and Sequoia/Kings Canyon National Parks and with Lawrence Livermore National Laboratory. These provide abundant opportunities for graduate students to interact with a broad range of internationally acclaimed scientists and policy makers while also providing access to some of the world's most powerful research instrumentation.

I hope you will explore UC Merced for your graduate education. As the 10th and newest campus of the University of California, we can offer our founding graduate students the matchless experience of being there at the beginning. You will have a profound impact on the campus spirit, culture and traditions that will become the hallmarks of the San Joaquin Valley's first UC campus.

Graduate education is about adventure and exploration; so too is the development of a new campus. The entrepreneurial spirit that drives the best graduate students is identical to that needed for the creation of a new campus. The faculty and the Graduate Division look forward to providing our students an educational experience that will be the stepping stone to a truly exceptional career.

Keith Alley, Dean Graduate Division

SOLVING SOCIETY'S CHALLENGES

Society's most intractable problems are broad based and multifaceted. Viable solutions to these problems require a scope of multidisciplinary approaches that can benefit the people of California and the world beyond. UC Merced is committed to offering graduate students an opportunity to work on many of society's most pressing and important problems. The research interests of our faculty reach across the spectrum of modern science and scholarship. Research interests among UC Merced's initial faculty include:

- History of the Cold War and nuclear armament
- Immigration, health services, border controls, patterns of immigrant naturalization and implications for policy of migration patterns
- Ethnic diversity and political participation
- Psychology of bilingualism and second language learning
- Experimental and quasi-experimental design, meta-analytic methods, program evaluation and effects of psychotherapy
- U.S. economic history and political economy
- Digital cultural atlases for history and heritage preservation
- Space, mapping and power in pre-industrial Eurasia
- Spanish language literature of the Americas and Spain
- Transport of organic and inorganic contaminants in natural systems
- Structural and functional characteristics of biomaterials
- Design of environmental sensors for contaminant transport
- Computational biology, genomics and proteomics
- Biology of stem cells
- Philosophical issues in neuroscience and cognitive science
- Nanotechnology and solar energy

Given UC Merced's plans for substantial growth during its early years, this list will expand rapidly. The current list of UC Merced faculty can be found online at http://www.ucmerced.edu/faculty/faculty/list.asp.

While the scope of graduate education at UC Merced will be national and international, the campus location also offers unique research avenues. From the cultural diversity of the San Joaquin Valley to the ecological diversity of the Sierra and the coastal mountains, the interior of California offers an abundance of unique living, learning and research opportunities. The interdependence of the Valley and the surrounding mountains provides a natural laboratory for creating environmental sustainability in the presence of an expanding and diverse population base.

UC Merced will offer an individually tailored graduate program with emphases in six areas. These include Quantitative and Systems Biology; Molecular Science and Engineering; Environmental Systems; Social and Cognitive Sciences; World Cultures; and Computer and Information Systems (in development.) Each of these is highly interdisciplinary in approach and designed to facilitate interactions between faculty and students from a broad scope of traditional academic disciplines. The graduate group structure for overseeing each of these emphases is composed of faculty from multiple schools. This is intended to offer graduate students the flexibility to address major societal problems using the tools of a wide variety of disciplines.

PREPARING FOR AN ADVANCED DEGREE

Admission to a graduate program at UC Merced requires a bachelor's degree, or its equivalent, that is comparable to a degree from the University of California both in the level of scholarly achievement and in the distribution of academic subject matter. Although applications for graduate study will be evaluated primarily on scholarly achievement, UC Merced will utilize the totality of a prospective student's qualifications, including research, work experience, recommendations and other creative accomplishments, to render a decision. To be eligible for admission to the UC Merced Graduate Division, you must have a minimum B average in your undergraduate course work. In addition to your undergraduate transcripts and an application, you will need to submit Graduate Record Examination (GRE) scores, letters of recommendation and, for certain programs, examples of your own written work that can be evaluated by the graduate admissions committee. Information regarding the GRE is available online at www.ets.org or at (609) 771-7670.

APPLYING FOR ADMISSION

An applicant can be considered for only one program area during a term. Applications to UC Merced can be accessed electronically at http://graduatedivision.ucmerced.edu/. Applications are accepted for the Fall semester only. Prospective students are encouraged to begin the admissions process as early as possible in the prior academic year. International applicants should consult the UC Merced Graduate Division website listed above for details regarding application and admission. Residents of the United States must have all application materials at UC Merced by January 15. In order for an application to be fully considered, a non-refundable application fee of \$60 must be paid. You may pay using a credit card when applying online. Alternatively, checks should be made payable to UC Regents and mailed to the Graduate Division Office. Fee exemptions for UC approved programs are available.

INTERNATIONAL STUDENTS

Students with credentials from universities outside the United States should begin the application process well in advance of the deadline date. Official copies or certified copies of all transcripts in English and in the original language are required.

Applicants whose native language or language of instruction is not English must show evidence of having recently taken the Test Of English as a Foreign Language (TOEFL) or the International English Language Testing Service (IELTS) examination. UC Merced requires a minimum score of 550 on the paper test or 213 on the computer-based TOEFL test or a score of at least 7 on the IELTS. Information on the TOEFL is available online at www.toefl.org and IELTS information at www.ielets.org. These requirements are waived for applicants who have received an advanced degree from a U.S. institution or from a country where English is the language of instruction.

International applicants must certify that they have sufficient funds to cover fees, tuition and living expenses for the first year of their study at UC Merced. A Foreign Applicant Questionnaire for the purpose of verifying the amount and source of funds available for graduate study will be forwarded upon acceptance into graduate study. Financial verification must be provided before visa forms can be issued.

ADMISSIONS AND REGISTRATION

A formal notice from the dean of the Graduate Division is the official proof of admission to graduate study at UC Merced. Successful applicants will be notified as soon as possible after the program faculty has made its recommendations to the dean of the Graduate Division. Accepted students will be asked to verify their intention to register by filling out and returning a Statement of Intent to Register. Return of this form will reserve your slot in the program. Should you choose not to accept the offer of admission, we ask that you also notify us by completing the Declination of Admission section so that we can offer the place to another applicant.

Individuals must register each semester to retain graduate student status. Registration provides the necessary access to courses, facilities and faculty. Students holding nonimmigrant visas must register for each semester covered by their visa.

PROGRAMS OF STUDY

UC Merced will offer the Master of Science (M.S.), Master of Arts (M.A.) and Doctor of Philosophy (Ph.D.) degrees. New students will be assigned a faculty advisor and committee that will assist them in developing a curriculum to meet the requirements. Although considerable flexibility to meet individual needs exists, requirements usually include a core of required material that a student must master.

The M.S. and M.A. degrees are either Plan I or Plan II programs. Plan I requires a minimum of 20 semester units of upper division and graduate courses plus completion of a thesis. Plan II requires at least 24 semester units of upper division and graduate courses, followed by a comprehensive examination administered by the faculty.

Students pursuing M.S. or M.A. Plan I degrees will begin their thesis research at the end of the first year. Although they may continue to take additional graduate seminars or independent study, the majority of the second year will involve thesis research and writing. The thesis committee must approve the scope of the thesis and provide guidance during the process of developing the thesis. Approval of the thesis must be unanimous for the award of the master's degree.

The Ph.D. degree is designed to prepare students for creative activity and original research. A doctoral degree is awarded in recognition of a student's knowledge of a broad field of learning and for distinguished accomplishment in that field through an original contribution of significant knowledge. The dissertation must demonstrate a high level of critical ability, imagination and synthesis. In contrast to the master's degrees, there are no University unit requirements for the doctorate, although individual programs may set specific course requirements. However, students must complete at least four semesters of academic residence at UC Merced and successfully complete the course requirements before they are allowed to take the Qualifying Examination.

All students pursuing the Ph.D. degree must pass a Qualifying Examination before admission to candidacy. Students are expected to pass the Qualifying Examination before the beginning of their third year of graduate study unless they successfully petition the Graduate Council to take it at a specific later date. The intent of this examination is to ascertain the breadth of a student's comprehension of fundamental facts and principles that apply in their major field of study. It will also determine the student's ability to think critically about the theoretical and practical aspects of the field.

Students will be advanced to candidacy when they have done the following:

- Successfully completed the Qualifying Exam,
- Maintained a minimum grade point average of 3.0,
- Received incomplete grades in no more than two courses, and
- Fulfilled any language requirement associated with their program.

Once a student is advanced to candidacy it is imperative that he/she begin his/her dissertation studies promptly.

Founding graduate programs will be built around an interdisciplinary, graduate group model that melds faculty expertise and scholarly approaches that transcend normal disciplinary boundaries. Information about each of the areas of study can be found on the Graduate Division website at http://graduatedivision.ucmerced.edu. At opening we are planning to offer individual graduate instruction with an emphasis in the following areas of concentration:

QUANTITATIVE AND SYSTEMS BIOLOGY

The life sciences are undergoing a vast and fundamental metamorphosis from a discipline based on qualitative observation and description into a quantitative science based on comprehensive datasets and predictive models. The Quantitative and Systems Biology Graduate Group at UC Merced offers a multidisciplinary research and training program for doctoral students who want to be at the forefront of this revolution of the biological sciences. Research projects are available on topics ranging from intercellular signaling to computational molecular biology. Coursework will provide a background in the tools of modern biology, including computational biology, genomics and advanced instrumentation. The graduate group will offer opportunities for students interested in multidisciplinary projects at the interface among biology, computer science and bioengineering. Participating faculty:

- KEITH ALLEY, Professor of Natural Sciences
- MIRIAM BARLOW, Assistant Professor of Natural Sciences
- MICHAEL E. COLVIN, Professor of Natural Sciences
- HENRY FORMAN, Professor of Natural Sciences
- JESSICA GREEN, Assistant Professor of Natural Sciences
- VALERIE LEPPERT, Assistant Professor of Engineering
- MONICA MEDINA, Assistant Professor of Natural Sciences
- MATHEW MEYER, Assistant Professor of Natural Sciences
- JENNIFER MANILAY, Assistant Professor of Natural Sciences
- DAVID OJCIUS, Professor of Natural Sciences
- RUDY ORTIZ, Assistant Professor of Natural Sciences
- MARIA PALLAVICINI, Professor of Natural Sciences
- CHRISTOPHER VINEY, Professor of Engineering



First UC Merced Graduate Student Retreat in Yosemite: I. to r, Yeon Park, Sarah Martin, Sheena Menezes, Jesus Cisneros, Jason Fisher, Daniel Santillano.

The Quantitative and Systems Biology program at the University of California, Merced offers individualized research-based courses of study leading to a Ph.D. or M.S. degree. All students in the Ph.D. program receive a stipend for the duration of study in the form of teaching and/or research assistantships as long as they are in residence and maintain adequate progress toward the degree.

We invite applicants with undergraduate degrees from any relevant discipline, including the life sciences, the physical sciences, engineering and mathematics. All applicants should take the GRE general test (subject tests are optional). Applicants from non-English speaking countries must achieve scores of at least 580 on the written or 230 on the computer version of the TOEFL (Test of English as a Foreign Language) and 45 on the TSE (Test of Spoken English). The admissions committee will make its decisions based on a comprehensive review of undergraduate coursework and GPA, GRE scores, research experience and recommendations in reaching a decision on admission.

ENVIRONMENTAL SYSTEMS

The Environmental Systems Graduate Group offers individualized, research-based courses of study leading to the M.S. and Ph.D. It strives to equip students with the knowledge and skills to improve the scientific understanding of Earth as an integrated system of atmosphere, hydrosphere, lithosphere and biosphere. This understanding is gained through the systematic study of biological, chemical and physical processes. Courses are designed to provide the scientific principles underlying the function and sustainability of natural and engineered ecosystems. The program places the principles of natural science and engineering in the context of pollution prevention, treatment and ecosystem restoration as well as integrating physical, chemical and biological cycles in environmental systems. Environmental Systems Graduate Group members are affiliated with the Schools of Natural Science and Engineering.

Programs of study emphasize laboratory, field and modeling studies of the natural and engineered environments from the perspective of biological, chemical and physical processes. In addition to research efforts at UC Merced, Environmental Systems faculty members are collaborating on interdisciplinary research topics with other University of California investigators as well as with scientists at Lawrence Livermore National Laboratory, Lawrence Berkeley National Laboratory, the National Park Service at Yosemite and Sequoia/Kings Canyon, the U.S. Geological Survey and others. Updated information can be found on the Graduate Division website at http://graduatedivision.ucmerced.edu/.

Initial faculty members participating in the Environmental Systems graduate emphasis include:

- ROGER BALES, Professor of Engineering
- MARTHA CONKLIN, Professor of Engineering
- JESSICA GREEN, Assistant Professor of Natural Sciences
- THOMAS HARMON, Associate Professor of Engineering
- VALERIE LEPPERT, Assistant Professor of Engineering
- PEGGY O'DAY, Associate Professor of Natural Sciences
- SAMUEL TRAINA, Professor of Natural Sciences
- ROLAND WINSTON, Professor of Engineering and Natural Sciences
- JEFF WRIGHT, Professor of Engineering

ATOMIC AND MOLECULAR SCIENCE AND ENGINEERING

Research in the Atomic and Molecular Science and Engineering Graduate Group is directed toward understanding how the optical, electrical, mechanical and transport properties of condensed phases and molecular assemblies arise from the fundamental properties of their constituent molecules and the manner in which those molecules interact. The basic scientific question is the following: how can a fundamental understanding of atomic- and molecular-level properties, obtained from experiment and/or theory, be used to predict the properties of materials on larger length scales? The ability to make this connection can be exploited to design new molecules and materials for applications in energy conversion, optics, information storage and transmittal, structural materials, biology and medicine.

Nanoscale materials – molecular assemblies or small crystals that have properties intermediate between individual molecules or atoms and bulk matter – are particularly interesting as bridges between the quantum mechanical and macroscopic worlds.

The Atomic and Molecular Science and Engineering Graduate Group program at UC Merced offers individualized, research-based courses of study leading to the Ph.D. degree. While the M.S. degree is also offered, admission will usually be granted only to students who intend to pursue the Ph.D. Interdisciplinary projects are highly encouraged, as are interactions with faculty members or senior scientists outside UC Merced as collaborators, graduate committee members or co-advisors. We invite applications from a wide variety of undergraduate majors including chemistry; physics; biochemistry; molecular biology; materials science; computer science; and biomedical, chemical, materials, mechanical, electrical and environmental engineering.

Initial faculty members participating in the Atomic and Molecular Science and Engineering graduate emphasis include:

- MICHAEL E. COLVIN, Professor of Natural Sciences
- ANNE MYERS KELLEY, Professor of Natural Sciences
- DAVID F. KELLEY, Professor of Natural Sciences
- VALERIE LEPPERT, Assistant Professor of Engineering
- MATTHEW MEYERS, Assistant Professor of Natural Sciences
- CHRISTOPHER VINEY, Professor of Engineering

SOCIAL AND COGNITIVE SCIENCES

Students interested in Social and Cognitive Sciences may apply to study for either a terminal master's degree or a doctoral degree. Initial areas represented by current faculty include economics and experimental psychology, behavioral research methodology, and cognitive science.

Initial faculty members participating in the Social and Cognitive Sciences graduate emphasis include:

- KENJI HAKUTA, (Psychology) Professor of Social Sciences, Humanities and Arts
- SHAWN KANTOR, (Economics) Professor of Social Sciences, Humanities and Arts
- TEENIE MATLOCK, (Psychology and Cognitive Science)
 Assistant Professor of Social Sciences, Humanities and Arts
- BELINDA REYES, (Public Policy) Assistant Professor of Social Sciences, Humanities and Arts
- WILLIAM SHADISH, (Psychology) Professor of Social Sciences, Humanities and Arts
- CAROL TOMLINSON-KEASEY, (Psychology) Professor of Social Sciences, Humanities and Arts
- J. ARTHUR WOODWARD, (Psychology) Professor of Social Sciences. Humanities and Arts
- JEFFREY YOSHIMI, (Philosophy and Cognitive Science)
 Assistant Professor of Social Sciences, Humanities and Arts

WORLD CULTURES

A graduate group in World Cultures will offer individualized, research-based courses of study leading to M.A. and Ph.D. degrees. The program will explore the rich cultural and historical heritage of California, the San Joaquin Valley and the Sierra Nevada as a starting point for understanding world cultures in their historical, political and cultural contexts, and the effects of immigration and migration on society and culture. Students will gain a professional knowledge of the methods by which historians, artists, philosophers, literary scholars and other humanists and social scientists examine societies and cultures. The program will focus on three main areas: Public History and Cultural Preservation Studies, Literatures and Cultures of the Spanish-Speaking World and Literatures, and Cultures of the English-Speaking World. These are conceived as overlapping areas that would permit students to concentrate on one particular area of research while exploring wider implications of their research. Since proximity to the Sierra Nevada and the other splendid natural features of California has significantly influenced literature and the development of the arts in the State, students will also benefit from the intersections of interest between the World Cultures Institute and the Sierra Nevada Research Institute, particularly in the area of the cultural understanding of wilderness and the environment. The construction of the faculty for the World Cultures graduate group is currently ongoing; please consult the Graduate Division website at http://graduatedivision.ucmerced.edu/ for additional information on the group's faculty and their research interests.

Initial faculty members participating in the World Cultures graduate emphasis include:

- VIRGINIA M. ADAN-LIFANTE, Consulting Faculty, Spanish
- JAN E. COGGANS, Assistant Professor of Literature
- GREGG HERKEN, Professor of History
- SEAN MALLOY, Assistant Professor of History
- MANUEL MARTIN-RODRIGUEZ, Professor of Literature
- RUTH MOSTERN, Assistant Professor of History
- DUNYA RAMICOVA, Professor of Arts
- CRISTIAN H. RICCI, Assistant Professor of Literature
- JEFFREY YOSHIMI, Assistant Professor of Philosophy

COMPUTER AND INFORMATION SYSTEMS

A Graduate Group in Computer and Information Systems is being formed to offer individualized, research-based courses of study leading to M.S. and Ph.D. degrees. The program will serve as a focal point for research by students who desire to make contributions to fields such as digital information processing and informatics, networking and distributed computation, database design and development, high-performance simulation and modeling, parallel and distributed systems, algorithm design and testing, image processing and analysis, and software engineering. The group will focus on research on the theory and foundations of computing, system software, and computer system and networks design, with applications across the full spectrum of science and engineering. Computer and information systems are highly cross-disciplinary and will involve faculty within all three initial Schools at UC Merced. The faculty who

are being recruited to UC Merced will determine initial curricular emphases within this broad framework for Computer and Information Systems, with additional disciplinary areas to be developed as faculty are added.

Graduate education in Computer and Information Systems will be characterized by multi-investigator, multi-disciplinary effort. It is also expected that there will be research collaborations between students and faculty members affiliated with the graduate group, and scientists at the Lawrence Livermore National Laboratory, particularly with respect to the use of specialized computational equipment. Since the construction of the Computer and Information Systems Graduate Group is currently ongoing, please consult the graduate division website at http://graduatedivision.ucmerced.edu/ for additional information on the group's faculty and their research interests.

GRADUATE STUDENT RESEARCH POSITIONS AND TEACHING ASSISTANTSHIPS

For information on graduate student research positions or teaching assistantships, please see the Graduate Student Financial Support section of this catalog.

IMPORTANT CONTACT INFORMATION

Graduate Division

http://graduatedivision.ucmerced.edu/ graddiv@ucmerced.edu Director of Admissions: Callale Cierra ccierra@ucmerced.edu (209) 724-2998 5200 N. Lake Road Merced, CA 95340

Financial Aid

finaid@ucmerced.edu Financial Aid Advisor: Heather Nardello (209) 724-4384 5200 N. Lake Road Merced, Ca 95340

Free Application for Federal Student Aid (FAFSA):

www.fafsa.ed.gov

Graduate Record Exam (GRE):

www.ets.org

Test of English as a Foreign Language (TOEFL):

www.toefl.org

International English Language Testing Service (IELTS):

www.ielets.org

GOVERNANCE OF GRADUATE EDUCATION

Graduate study is administered by the Graduate Council, a committee of the Academic Senate, and by the dean of the Graduate Division. The Coordinating Committee on Graduate Affairs is a systemwide body that assures coordination between the campuses and develops general policies that govern graduate education throughout the University of California.

FINANCIAL SUPPORT

The Office of Financial Aid and Scholarships coordinates all forms of financial support and administers need-based financial aid programs for graduate students. We are here to help students understand the financial aid opportunities as well as the criteria utilized in determining eligibility for the various financial aid programs available at UC Merced.

Several forms of financial support will be available to facilitate the pursuit of a graduate education at UC Merced. Most forms of support are granted for merit, while others are granted for financial need or for a combination of merit and need. In large part, the Graduate Division provides financial support for graduate students, and we work closely with that office to coordinate all forms of student support.

TYPES OF AID

Financial support is available at UC Merced in the form of graduate student research positions, teaching assistantships, fellowships and loans. All students, regardless of income, are encouraged to apply.

Graduate Student Research (GSR) Positions

Research positions afford excellent opportunities to gain invaluable experience in areas of importance to your graduate education and to receive financial support at the same time. Information and application materials for GSR positions are available from the Graduate Division.

Teaching Assistantships (TA)

Graduate students working toward advanced degrees are given duties in undergraduate courses that may include conducting discussion or laboratory sections, grading students' work and providing students with individual help in the subject. Teaching assistants are chosen for excellent scholarship and promise as teachers. They serve apprenticeships under active tutelage and supervision of regular faculty members. Teaching assistants are engaged in learning how to teach and work closely with faculty mentors. A limited number of teaching assistantships are available each year. On the recommendation of the academic deans, the Graduate Division makes appointments to teaching assistantships.

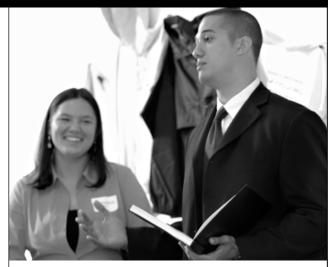
Fellowships

Fellowships are awarded primarily on the basis of scholarship and the promise of outstanding academic and professional achievement. Consideration is given to the extent and quality of previous undergraduate and graduate work, evidence of ability in research or other creative accomplishment, evidence of intellectual capacity and promise of productive scholarship. Financial need or the availability of other sources of support in your graduate program is not relevant to the evaluation of academic merit, but may be an additional criterion for some fellowships. Students must establish eligibility for need-based fellowships by filing a Free Application for Federal Student Aid (FAFSA). For faster and more accurate filing, students can fill out the FAFSA online at http://www.fafsa.ed.gov.

Loans

Financial aid awards that require repayment, loans offer the opportunity to defer the cost of your educational expenses by borrowing now and repaying later. Some loan programs are based on financial need, but there are loan programs available to all students regardless of income. Loan programs available through UC Merced are federally funded, providing long-term, low-interest loans.

Federal Subsidized Stafford Loans: These loans are awarded to students with financial need. This loan is "subsidized" in that the federal government pays the interest while the student is in school and during the grace period (the



UCSD undergraduate Stephanie Lai and UC Merced Student Affairs Fellow Michael Jackson making a presentation.

first six months after leaving school or dropping to less than half-time enrollment status).

Federal Unsubsidized Stafford Loans: Not based on financial need, these loans are available to all eligible students, regardless of income. This loan is "unsubsidized" in that the student is responsible for paying all interest due. There is no federal interest subsidy for the loan. Interest accrues immediately upon disbursement. Borrowers may elect to pay accrued interest on a monthly or quarterly basis or have it added back to the principal balance in a process called capitalization.

HOW TO APPLY

To be considered for fellowships and loans: Graduate applicants who are US citizens, permanent residents or immigrants are required to file a "Free Application for Federal Student Aid" (FAFSA). Although the FAFSA can be filed at any time, it is strongly suggested that you file by the priority processing date of March 2. However, if the March 2 deadline has passed, you may still submit this form. We process some forms of financial aid throughout the year. For faster and more accurate processing, you may fill out this form online at http://www.fafsa.ed.gov. This form is used to determine financial need only. Financial need is a component of the eligibility criteria for many forms of financial support. If you need assistance with your application, please contact the Office of Financial Aid and Scholarships.

To be considered for graduate student research or teaching assistant positions: Graduate students who are interested in obtaining a graduate student research position or a teaching assistant position should contact the Graduate Studies Division as soon as possible.

FOR ADDITIONAL INFORMATION:

Please refer to the Money Matters website at http://graduatedivision.ucmerced.edu for additional information and assistance.

RESEARCH AT UNIVERISTY OF CALIFORNIA, MERCED

Research is the pioneering work of the intellect, an adventure at the frontiers of knowledge in which faculty engage both their undergraduate and graduate students. It reflects mankind's indomitable spirit of optimism that we can and must do better. Every human pursuit benefits from the ongoing process of evaluation and discovery. As the first research university to be built in the 21st century, UC Merced is positioned for new approaches to research in support of the educational mission. As the 10th campus of the University of California, UC Merced joins in the University's unparalleled history of accomplishment. That history also sets the high standards that UC Merced must live up to.

As an undergraduate student at UC Merced, you will find faculty research enriching your education and your ability to analyze and critique information objectively. Exposure to research approaches will help you to begin to define solutions

to the weighty problems with which humankind will wrestle during your lifetime. A highlight of your first year will be a freshman seminar in which a faculty member will introduce you to his or her current explorations. In addition, your undergraduate courses will be continually enriched and invigorated by faculty discoveries, which reflect an ever-evolving curriculum. You will also have formal opportunities to participate in ongoing faculty projects, joining graduate students and postdoctoral fellows in labs, field work and other research settings.

As a graduate student you will plumb the depths of some of the world's most challenging problems through your research and scholarly work. Graduate students work with faculty as apprentice scholars, building the skills needed to create and communicate discoveries in their field. The distinguishing feature of UC Merced's graduate programs is their interdisciplinary nature, which provides a breadth of knowledge that helps put studies into a wider context. You will join a community of scholars and set your course for a career. Part of your research experience will include working closely with your faculty mentor and advisory committee as you build professional expertise and prepare for future.

To foster discovery that brings faculty insights from many disciplines together, UC Merced is structuring many of its research and graduate educational activities around research institutes composed of faculty from multiple schools. At the outset two initial research organizations have been established to catalyze interdisciplinary research and scholarship: The Sierra Nevada Research Institute and the World Cultures Institute.

THE SIERRA NEVADA RESEARCH INSTITUTE (SNRI)

The mission of the Sierra Nevada Research Institute is to discover and disseminate new knowledge that contributes to sustaining natural resources and promoting social well being in the San Joaquin Valley and Sierra Nevada regions of California. These regions are legendary for their scenic beauty, vast natural resources, physical and biological diversity, and cultural heritage. The San Joaquin Valley and the Sierra Nevada lead the nation in agricultural production and in several natural resource and recreation industries. However, rapid population growth; competition for natural resources; air, water and soil pollution; and competing land uses pose serious threats to the sustainability of these regions. Solving these problems requires the combined perspectives of a number of disciplines and multidisciplinary research efforts at the interface of traditional disciplines.

The mission of the Sierra Nevada Research Institute is accomplished through:

- Collaborative, multidisciplinary, fundamental research conducted by faculty, students, staff and affiliated scientists in natural sciences, engineering and social sciences
- Strong interactions with related research units within the UC system and close collaborative relations with scientists and managers at National Laboratories; local, state and federal agencies; and the National Park Service



UC Merced Chancellor joins National Park Service officials at the Sierra Nevada Research Institute's Wawona Station groundbreaking ceremony.

 Extensive sharing of Sierra Nevada Research Institute data and information with public and private stakeholders

The Sierra Nevada Research Institute is organized around an Earth Systems Science model. This model combines the earth sciences (soils, geology, water and atmospheric sciences) with biological sciences (ecology and molecular biology) as well as environmental science, environmental engineering and social science in integrated studies of complex problems at the systems level. Through these balanced research efforts, the Sierra Nevada Research Institute serves as a source of objective scientific information as California faces the growing challenge of sustaining the integrity and quality of its human and natural resources into the future.

Through the Sierra Nevada Research Institute our students and faculty will have access to a variety of biological field stations in the Sierra Nevada, located in Yosemite, Sequoia and Kings Canyon National Parks.

In addition, the Virginia Smith Trust Reserve adjacent to the UC Merced campus provides additional sites for research.

THE WORLD CULTURES INSTITUTE

Merced and the San Joaquin Valley are historically and today a crossroads for rich mixes of peoples from throughout the world. For millennia before the arrival of Europeans, Native Americans developed an interdependent relationship with the Valley, foothills and mountain ecosystems. Today, the Valley is also part of a dynamic global economy, calling for a broad and deep understanding of many cultures and traditions. As a rapidly growing agricultural region, the Valley is a place for understanding the ways in which different cultures think about stewardship of the environment.

California's location and immigrant heritage have situated it within the Pacific Rim region as one of the greatest centers of trade, commerce and cultural exchange the world has ever known. The Pacific Region is defined by mobility and migration that have resulted in new cultural practices and knowledge. The region is an unparalleled arena for the study of the changes rung in by sophisticated technologies and of the cultural effects of those changes.

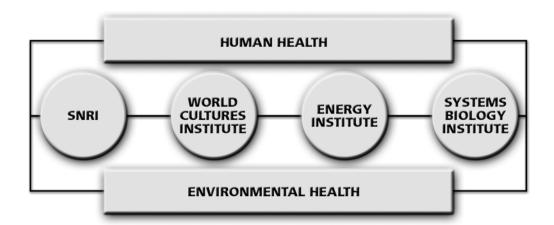
People have come from around the world to make the San Joaquin Valley, California and the United States what they are today. The World Cultures Institute will be a place to understand better what has shaped and is shaping our modern cultural identities. As the World Cultures Institute grows, its faculty and staff will address several themes:

- Migration and displacement
- Histories and cultures of California, and particularly in the San Joaquin Valley
- Local, regional and national identities and boundaries, and their crossings
- Economics, religion, the arts and ethnic identity in the formation of the individual and society
- Nature and culture; and the relation of wilderness to the manmade landscape, with the role of technological invention in affecting both
- · Agriculture and society
- Evolving and competing images (artistic, literary, cinematic, architectural) of California

Students are invited to participate in research with historians, anthropologists, artists, political scientists and policy specialists, economists, scholars of literature and languages, and others – even scientists. Internships with a cultural resources emphasis are anticipated with museums, arts centers, historical societies, community groups, libraries, public education organizations and National Parks.

FUTURE INSTITUTES

UC Merced is committed to developing stellar research programs that will make a major impact in understanding the basis of and proposed solutions to complex problems facing society today. Understanding these problems and developing strategies to solve them requires input and expertise from multiple arenas. The institutes provide a framework for faculty, students and visiting scientists from multiple disciplines to come together to provide disciplinary and interdisciplinary expertise to solve complex problems.



- Health of the environment (SNRI)
- Helping people live together (World Cultures Institute)
- Sustainable and renewable energy (Energy Institute--proposed)
- Human health (SysBio Inst-proposed)

The WCI and SNRI were developed during conception of the campus and are present at its inception. The SysBio and Energy Institute are planned institutes that the faculty and administration are jointly developing.

Undergraduate Courses *Lower Division Courses*

Courses numbered 1–99 are designed primarily for freshmen and sophomores but are open to all students for lower division credit.

Upper Division Courses

Courses numbered 100–199 are open to all students who have met the necessary prerequisites as indicated in the catalog course description. Preparation should generally include completion of one lower division course in the given subject or completion of two years of college work.

Graduate Courses

Courses numbered 200–299 are open to graduate students. Undergraduate students who have completed at least 12 units of upper division work basic to the subject matter of the course may enroll with the approval of the instructor in charge of the course.

Prerequisites

Prerequisites for courses should be followed carefully; the responsibility for meeting these requirements rests on the student. If you can demonstrate that your preparation is equivalent to that specified by the prerequisites, the instructor may waive these requirements for you. The instructor also may request that a student who has not completed the prerequisites be dropped from the course.

Course Substitutions

Students may petition the appropriate dean to substitute a suitable course in place of a required course (for a general education course: petition the Dean of College One; for a major course: petition the dean of the School in which the major resides). Petition forms are available on the following Websites: Office of the Registrar, the Student Advising & Learning Center, College One and Schools.

Grading Options

Unless otherwise stated in the course description, each course is letter graded with a P/NP or S/U option (unless required for your major or graduate program.)

ANTHROPOLOGY

Lower Division Courses

ANTH 1: Cultural Anthropology [4]

Introduction to human culture and cultural diversity, including the methods by which anthropology seeks to understand human culture.

ANTH 2: Physical Anthropology [4]

Introduction to human evolution, primate evolution, fossil man and evolution of the mind

ANTH 90X: Freshman Seminar [1]

Examination of a topic in Anthropology.

ANTH 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

ANTH 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

ANTH 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

ARTS

Lower Division Courses

ARTS 1: Learning to See: Drawing [2]

Course in developing the cognitive skill of drawing by teaching the ability to see accurately. The material in this course is not limited to skills required for becoming an artist. Anyone interested in sharpening one's perceptions and in opening up one's creative capabilities will find this course useful. This is a studio class that will include drawing from nature. May be used as a lower division elective as well as counting towards a minor and major in arts.

ARTS 3: Learning to See: Painting [2]

Course teaching the skill of painting in watercolor to develop color vision. Seeing color is a complex process that when mastered enlarges one's perceptive powers. As a skill its use is not limited to those who want to become artists. Anyone interested in sharpening one's perceptions and in opening up one's creative capabilities will find this course useful. This is a studio class that will include painting from nature. May be used as a lower division elective as well as counting towards a minor and major in arts.

ARTS 10: Substances of Art [4]

Course introducing students to substances characteristic of the arts, with emphasis on cultural and social significance. The aim is to give each student the tools to develop one's own understanding of what art is, what makes individual works of art important and how to experience art as a source of enrichment in one's life. Two methods of inquiry will be utilized, historical and theoretical. Essential characteristics of the practice of art will also be examined. Course work includes research, writing and attendance at an art event. *Prerequisites: Core 1.*

ARTS 70: Techniques of Contemporary Artists [4]

Course giving students the opportunity to learn how to acquire technique. Students work with a practicing contemporary artist. Emphasis is put on process instead of on result. Thus this course is opened to any student who is interested in learning how technique supports creative processes, a skill that can be translated into use in all areas of life. Techniques will vary depending on the instructor artist's medium of expression. *Prerequisites: Consent of Instructor.*

ARTS 90X: Freshman Seminar [1] Examination of a topic in the Arts.

Upper Division Courses

ARTS 101: History of Clothing, Costume and Fashion: Euro-centric Pre-History to 1800 [4]

A survey of European and Euro-centric history of clothing, costumes and fashion spanning from the earliest evidence of clothing worn by humans in pre-history to 1800. Course emphasizes how intrinsically connected to all aspects of human existence clothing is, from political, economic, social and cultural history to geography, agriculture and climate, as well as psychology and art. Students will be able to pick research topics connected to their chosen area of study such as psychology or economics. May be used as an upper division elective as well as count towards a minor and major in arts.

ARTS 102: History of Clothing, Costume and Fashion: Euro-centric 1800 to 1980 [4]

A survey of European and Euro-centric history of clothing, costumes and fashion from 1800 to 1980. Course emphasizes how intrinsically connected to all aspects of human existence clothing is, from political, economic, social and cultural history to geography, agriculture and climate, as well as psychology and art. Students will be able to pick research topics connected to their chosen area of study such as psychology or economics. May be used as an upper division elective as well as counting towards a minor and major in arts.

ATOMIC AND MOLECULAR SCIENCE AND ENGINEERING

Graduate Courses

AMSE 212: Molecular and Solid State Quantum Chemistry [3]

Theory and practical application of molecular quantum mechanics. Schrödinger equation and matrix representations of quantum mechanics; simple exactly solvable model problems; calculation of observable properties; vibrational and electronic wave functions; approximation methods; quantum mechanics of spectroscopy. Graduate requirements include computer laboratory and a computational project. *Prerequisites: Graduate standing; CHEM 10, MATH 25, PHYS 9 or equivalent.*

AMSE 213: Chemical Thermodynamics and Kinetics [3]

Statistical mechanics, thermodynamics and chemical kinetics taught from a perspective that develops the behavior of bulk matter from molecular properties. Modern experimental and theoretical methods in kinetics. Graduate requirements include a computer laboratory and a computational project. *Prerequisites: Graduate standing; CHEM* 112 or MSE 212 or equivalent.

AMSE 231: Molecular Spectroscopy [3]

Time-dependent quantum mechanics; interaction of radiation with matter; electronic spectra of atoms and molecules; vibrational, rotational and Raman spectra; magnetic resonance spectroscopy; X-ray, neutron and electron diffraction. Modern experimental and theoretical methods in spectroscopy. Graduate requirements include a term paper critically evaluating a recent technique in spectroscopy. Prerequisites: Graduate standing; CHEM 112 or MSE 212 or equivalent cross-listed with CHEM 131.

AMSE 250: Material Characterization Techniques [3]

Introduction to techniques appropriate to the characterization of materials at molecular and larger scales, including spectroscopies, light scattering, thermal analysis, diffraction and microscopies. Designed to guide participants in the selection of techniques best suited to addressing particular questions about the structure, shape and arrangement of molecules. *Prerequisite: Graduate standing.*

AMSE 251: Microstructures, Processing and Properties of Materials [3]

Relationships between material properties and their molecular and higher-level organization; control of these properties by the environment to which the material is subjected during processing.

Prerequisite: Graduate standing.

AMSE 290: Current Topics in Molecular Science and Engineering [3]

Exploration of current research directions, problems and techniques in molecular and materials chemistry, physics and engineering. Course format emphasizes student-led presentation, analysis and discussion of reading assignments from the current and recent scientific literature. Topics will be determined by the instructor and will change each semester. *Prerequisite: Graduate standing in Atomic Molecular Science and Engineering group.*

AMSE 295: Graduate Research [1-6] Supervised research. *Prerequisites:* Graduate standing and consent of instructor. S/U only.

AMSE 298: Directed Group Study [1-6] Group project under faculty supervision. *Prerequisites: Graduate standing and consent of instructor. S/U only.*

AMSE 299: Directed Independent Study [1-6]

Independent project under faculty supervision. *Prerequisites: Graduate standing and consent of instructor. S/U only.*

BIOENGINEERING

Lower Division Courses

BIOE 30: Introduction to Bioengineering [4]

Presents students with an overview of the creative synergies between engineering and life sciences that define the scope of bioengineering. Examples of successful bioengineering endeavors (devices, materials, processes, models) will be provided. Discussion of current frontiers and future direction of bioengineering, with an emphasis on information technology and nanotechnology. Prerequisites: ICP 1 (or equivalent), BIS 1, CHEM 8 (may be taken concurrently).

BIOE 90X: Freshman Seminar [1] Examination of a topic in bioengineering.

BIOE 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

BIOE 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

BIOE 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

BIOE 100: Physiology for Engineers [4]

Using the conceptual, analytical, modeling and design tools of engineering to achieve quantitative insights into physiological systems. Transport mechanisms, energy transduction, feedback and feed forward control, optimization and materials selection principles in the context of cells, tissues and organs. How muscles, nerves and biological fluids interact to allow you to read this course description. *Prerequisites: MATH 25 (or equivalent), BIS 104, CHEM 2, ENGR 45.*

BIOE 101: Modeling Nanoscale Processes in Biology [3]

Advanced mathematical modeling, simulation and data analysis applied to biological problems at the molecular level, probabilistic models. Scope and limitations of these techniques. Molecular conformations and folding, protein structure, molecular interactions, binding sites, formation of aggregates and complexes, phase changes, membrane transport, physiological control systems in cells. *Prerequisites: MATH 127, BIS 104.*

BIOE 102: Biosensors [4]

Design of natural and artificial devices for characterizing the physical and chemical environment inside and outside living cells. Detection of metabolites, toxins, pathogens and cancers. Molecular and nanoparticle probes. Immunosensors. Nucleic acid sensors and DNA chips. Enzyme-based biosensors. Organism and whole cell-based biosensors. Natural and synthetic receptors for biosensors. Remote diagnosis. *Prerequisites: BIS 102, BIS 104.*

BIOE 110: Self-Assembling Molecular Systems [3]

Preparation, characterization and applications of supramolecular structures. Factors that promote controlled molecular assembly at interfaces and in 3-D. Hydrophobic bonding and the role of water. Liquid crystalline phases. In vivo and in vitro examples of self assembly. Biomimetic materials: the quest for adaptive responses to changes in environment, and self-healing. "Green" processing routes via biotechnology. Limitations of biomimetic materials. *Prerequisites: ICP 1 (or equivalent), BIS*

BIOE 111: Biomembranes [3]

The molecular and physical chemistry of membranes formed from natural and synthetic amphiphiles. Relationships between surfactant molecular structures, chemical and physical environment and membrane assembly. Solubility of proteins in biomembranes. Pore formation and structure. Transport through biomembranes. Biomembranes as catalysts and reaction vessels. Characterization of membrane structure and properties. *Prerequisites: ICP 1 (or equivalent), BIS 102.*

BIOE 112: Biomolecule-Substrate Interactions [3]

Cell receptor biology in the context of cell interactions with materials. Biomolecule adsorption to solid materials. Relevance to catalysis, adhesion and responses to implanted biomaterials. Interactions between nanoparticles and biological tissue. Coagulation and thrombosis, infection, acute inflammation, chronic inflammation and the foreign body response, immune and tumorgenic mechanisms. Surface and interface characterization methods. *Prerequisites: ICP 1 (or equivalent), BIS 102.*

BIOE 113: Bioinstrumentation [4]

Signals and interactions that are useful in characterizing biomolecules and small-scale biological structures. Principles of 2-D and 3-D image formation. Resolution limits of imaging and non-imaging characterization techniques. Integration of mechanical, sensor and control technologies into devices that can perform diagnoses and repairs at cellular and subcellular length scales. *Prerequisites: ICP 1 (or equivalent), BIS 102.*

BIOLOGICAL SCIENCES

Lower Division Courses

BIS 1: Contemporary Biology [4]

Introduction to the major concepts in biology including origin of life, evolution, DNA, genes and genomes, principles and patterns of inheritance, genotype to phenotype, gene environment and disease relationships, biotechnology, ecosystem structure and function, nutrient cycles and pollution, biodiversity, earth systems.

BIS 2: Introduction to Molecular Biology: Science and Applications in Biotechnology [4]

Introduction to the molecules and molecular processes underlying life. Overview of molecular biology, its applications in biotechnology, and impact on society, industry, modern medicine and environment.

BIS 3: To Know Ourselves: Molecular Basis of Health and Disease [4]

Introduction to the molecular basis of a number of human diseases and molecularbased therapies for disease treatment.

BIS 10: Genetics, Stem Cells and Development [4]

Issues associated with genes, stem cells and embryonic development increasingly impact our lives. This course integrates an overview of biologic topics such as genetic testing, stem cells and the use of animal models with their bioethical considerations. It will place science in the context of personal decisions and ethics.

BIS 50: Human Development [4]

Male and female reproductive systems, hormonal control of egg-sperm interactions, fertilization, venereal disease, embryonic development, fetal physiology.

BIS 51: Cancer and Aging [4]

Introduction to the biology of cancer and aging, including discussions of the biological and molecular basis of aging and cancer, novel and conventional cancer treatments, cancer prevention and prospects for new approaches to increase longevity and health.

BIS 60: Nutrition [4]

Introduction to nutrition science that integrates basic concepts of nutrients, human physiology, microbiology, biochemistry and the psychology of wellness.

BIS 90X: Freshman Seminar [1]

Examination of a topic in the biological sciences.

BIS 95: Lower Division Undergraduate Research [1-6]

Supervised research. *Permission of instructor required.*

BIS 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

BIS 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

BIS 100: Molecular Machinery of Life [4]

Introduction to the chemical processes underlying life, covering the structure and properties of biological macromolecules, metabolism, regulation and energy transduction. *Prerequisites: BIS 1, CHEM 8, ICP 1 or equivalent. Cross-listed with CHEM 110.*

BIS 101: Biochemistry [4]

Advanced course on enzyme mechanisms and regulation. *Prerequisite: BIS 100.*

BIS 101L: Biochemistry Laboratory [1]

Laboratory experiments demonstrating and reinforcing topics covered in BIS 101.

Prerequisites: BIS 101 or CHEM 111.

Cross-listed with CHEM 111L.

BIS 102: Molecular Biology [4]

Advanced course on the mechanisms of nucleic acid replication, transcription and translation as well as gene regulation and expression. *Prerequisite: BIS 100.*

BIS 102 L: Molecular Biology Laboratory [1]

Laboratory experiments demonstrating and reinforcing topics covered in BIS 102. Prerequisite: BIS 102 must be taken concurrently.

BIS 104: Biophysics [4]

An introduction to the physical processes underlying biological phenomena. Topics to be covered include transport and diffusion, bio- chemical reaction kinetics and thermodynamics, molecular motors, cell motion and cellular electrophysiology. *Prerequisites: BIS 100, CHEM 10 or ENGR130 and consent of instructor.*

BIS 104 L: Biophysics Laboratory [1]

Laboratory experiments demonstrating and reinforcing topics covered in BIS 104. *Prerequisite: BIS 104 must be taken concurrently.*

BIS 105: Enzymology [4]

Advanced course on enzyme mechanisms and regulation. *Prerequisite: CHEM 10, BIS 100*

BIS 105 L: Enzymology Laboratory [1]

Laboratory experiments demonstrating and reinforcing topics covered in BIS 105. Prerequisite: BIS 105 must be taken concurrently.

BIS 110: The Cell [4]

Introduction to the structure and function of bacterial, plant and animal cells, with an emphasis on universal cellular systems, including regulation of subcellular organization; control of cellular processes by internal and external signaling; and energy capture, storage and usage. *Prerequisites: BIS 1, CHEM 8, ICP 1 or equivalent, BIS 100.*

BIS 111: Cells, Tissues and Organs [4]

Introduction to principles of cell structure and the organization of cells into tissues, organs and organ systems. Both the cellular and extra- cellular components of the primary tissues and their compilation into the major organic systems will be covered. Emphasis on understanding the link between cellular architectures and organ function. *Prerequisites: BIS 110.*

BIS 112: Signal Transduction and Growth Control [4]

Signal transduction in mammalian cells with emphasis on molecular and genetic regulation of these processes and their role in cell function. *Prerequisites: BIS 110*.

BIS 120: General Microbiology [4]

Molecular basis for diversity in bacteria and archae. Significance of molecular diversity in microbial biology; genetic, physiologic and structure-function relationships that underlie the remarkable ability of these organisms to adapt to the environment. *Prerequisites: BIS 110.*

BIS 120 L: General Microbiology Laboratory [1]

Laboratory experiments demonstrating and reinforcing topics covered in BIS 120. *Prerequisites: BIS 120 must be taken concurrently.*

BIS 122: Microbial Pathogenesis [4]

Genetic and biochemical features of infectious agents, including identification and characterization of pathogens and the epidemiology of infectious diseases. *Prerequisite: BIS 120*

BIS 123: Human Parasitology [4]

Introduction to protozoan, worm and insect parasitism in animals and humans, and resultant diseases. Emphasis will be on epidemiology, diagnosis and immunology of parasitic infections. *Prerequisite: BIS 120*.

BIS 127: General Virology [4]

Introduction to biology of bacterial and animal viruses, focusing on structure, infective cycle, interactions with host, transmission, and methods of detection and control. Discusses scientific literature and current topics in virology. *Prerequisites: BIS 110.*

BIS 125: Emerging Public Health Threats [4]

Multidisciplinary course that covers the historical, sociological, medical and biological issues underlying new public health threats and the scientific and policy-based approaches to responding to these new threats. *Prerequisite: BIS 120.*

BIS 130: Plant Biology [4]

An introduction to the biology of plant life, including plant cell physiology, plant growth and development, and plant evolution and adaptation. *Prerequisites: BIS 110.*

BIS 140: Genetics [4]

Includes concepts of inheritance, structure and function of genes and genomes, recombination, genetic mapping, gene regulation, mutations, and recombinant DNA technology including labs and discussions. *Prerequisites: BIS 100*.

BIS 141: Evolution [4]

Natural Selection and Darwinian evolution, includes concepts of population and quantitative genetics, speciation, neutral theory and molecular evolution, phylogenetics, comparative genomics and macroevolution including labs and discussion. *Prerequisite: BIS* 140.

BIS 142: Comparative Genomics [4]

Introduction to the concepts behind comparative genomics and a detailed overview of the many tools and data bases used in comparative genomics. Specific topics include comparative approaches to the identification of genes and regulator regions in DNA sequences, the use of phylogenetic analyses to understand gene function and evolution, and methods for analysis of the organization and evolution of large genomes. *Prerequisite: BIS 141*.

BIS 142L: Comparative Genomics Laboratory [1]

Laboratory experiments demonstrating and reinforcing topics covered in BIS 142. Prerequisites: BIS 142 must be taken concurrently.

BIS 143: Biodiversity and the Tree of Life [4]

This course will focus on the current debates in the study of biodiversity such as Linnaean vs. phylogenetic nomenclature, DNA barcoding and anthropogenic effects on species diversity. It will also provide an overview of major domains of the Tree of Life and approaches currently being used to resolve different branches of the tree. *Prerequisites: BIS 140*.

BIS 144: Phylogenetics [4]

This course will provide the theory behind phylogenetic reconstruction and an introduction to the diverse methods for phylogenetic inference. How to deal with morphological and molecular characters will be discussed as well as the comparative method. Case studies will be examined in the complementary laboratory session. *Prerequisites: BIS 140, MATH 010.*

BIS 144L: Phylogenetics Laboratory [1] Laboratory experiments demonstrating and

reinforcing topics covered in BIS 144.

Prerequisites: BIS 142 must be taken concurrently.

BIS 145: Introduction to Population and Community Ecology [4]

Comprehensive introduction to the ecology of populations, communities and ecosystems. Course will examine the dynamics of single-species populations, and then move to species interactions including competition, predation, parasitism, and mutualism. Structure and dynamics of entire communities and food webs will also be examined. Course will discuss conservation biology applications throughout. *Prerequisites: BIS 1, MATH 21.*

BIS 146: Paleobiology [4]

This course will provide an introduction to the major geological factors that have affected the evolution and the diversity of organisms. It will also present how the fossil record can help us understand evolution of life through time, with an emphasis on macro-evolutionary events (e.g., mass extinctions, transitions between habitats, radiations). *Prerequisites: BIS 140*.

BIS 150: Embryos, Genes and Development [4]

Principles of developmental biology as revealed through analysis of invertebrate and vertebrate systems. Animal models will be used to examine the molecular and cellular mechanisms that influence cell fate. Cell signaling will be studied in the context of embryonic pattern formation and the development of body plans and organ systems. *Prerequisite: BIS 110.*

BIS 151: Molecular Immunology [4]

Emphasis on development and function of hematopoietic and immune systems and their roles in responding to environmental change, maintenance of health and disease pathogenesis. *Prerequisite: BIS 110*.

BIS 151 L: Molecular Immunology Laboratory [1]

Laboratory experiments demonstrating and reinforcing topics covered in BIS 151. Prerequisite: BIS 151 must be taken concurrently.

BIS 152: Cancer Genetics and Tumor Biology [4]

Topics include viral and hormonal carcinogenesis, molecular aberrations in cancer, tumor development, epigenetics and cancer, tumor immunology, oncogenes. *Prerequisite: BIS 110.*

BIS 153: Evolution and Development [4]

This course compares and contrasts the development and developmental cues of a variety of animals and emphasizes how conserved developmental pathways have been manipulated through evolutionary processes to produce different physical features. The effects of regulatory region mutations, gene duplication, and genetic co-opting will be investigated. *Prerequisites: BIS 141, BIS 150.*

BIS 160: Comparative Physiology [4]

Covers the function of the major organ systems by studying species-specific adaptations across the vertebrate subphylum. Emphasis on physiological adaptations to environmental challenges. Locomotion, reproduction, cardio-vascular, renal and pulmonary function will serve as the models for assessing the cellular basis for physiologic adaptation across the spectrum of vertebrates. *Prerequisite: BIS 100.*

BIS 160 L: Comparative Physiology Laboratory [1]

Laboratory experiments demonstrating and reinforcing topics covered in BIS 160. Prerequisite: BIS 160 must be taken concurrently.

BIS 161: Human Physiology [4]

The mechanisms underlying function of major human organs. Emphasis includes cells and membranes; cardiovascular, renal and gastrointestinal physiology; metabolism; endocrinology; and reproduction. *Prerequisite: BIS 100.*

BIS 161 L: Human Physiology Laboratory [1]

Laboratory experiments demonstrating and reinforcing topics covered in BIS 161 with an emphasis on scientific method. BIS 161 must be taken concurrently.

BIS 162: Evolutionary Constraints of Physiology [4]

An introduction to the materials upon which evolution acts. We will study the structure of animals, the materials from which living organisms are made and the limitations that those materials impose upon evolution. *Prerequisite: BIS 160.*

BIS 163: Endocrinology [4]

Basic principles of endocrinology; structure and functions of endocrine glands primarily in mammals with reference to other vertebrates for comparison; hormonal control of kidney function, metabolism, neural transmission and reproduction; mechanisms of hormone actions. *Prerequisites: BIS 110, CHEM 8 or equivalent, BIS 160 or approval of instructor.*

BIS 163 L: Endocrinology Lab [1]

Laboratory experiments demonstrating and reinforcing topics covered in BIS 163 with an emphasis on analytical techniques in endocrinology. *Prerequisites: BIS 163 must be taken concurrently. May be taken for course credit by graduate students lacking training in endocrinology.*

BIS 170: Neurobiology [4]

Examination of the general operations of the central and peripheral nervous system. Cellular neuroscience, including the molecular basis of excitability, synaptic transmission and neuronal signal transduction, as well as the organization and operations of the major neural systems associated with sensation, locomotion and higher brain function. *Prerequisite: BIS 110*.

BIS 170 L: Neurobiology Laboratory [1] Laboratory experiments demonstrating and reinforcing topics covered in BIS 170. Prerequisite: BIS 170 must be taken concurrently.

BIS 175: Biostatistics [4]

Advances in statistical techniques to investigate experimental data generated in molecular, cellular and evolutionary biology, and health sciences research.

Prerequisites: MATH 10, ICP 1 (or equivalent), or MATH 22.

BIS 180: Introduction to Scientific Modeling [4]

Introduction to basic modeling and dataanalysis skills for life science students through hands-on computational laboratories. Focus on the use of computational tools in the analysis of biological data to formulate hypotheses and develop models. Data reduction, model fitting and data visualization; standard software packages; and programming languages. *Prerequisite*: *BIS* 1.

BIS 181: Survey of Computational Biology [4]

Introduction to the principles and application of computational simulations and modeling in biology, ranging from bioinformatics to computational cell biology. Genome sequence analysis and annotation, phylogenic analysis, protein structure prediction, molecular modeling, and docking and simulations of metabolic and regulatory networks. *Prerequisite: BIS 180.*

BIS 182: Bioinformatics [4]

Detailed introduction to the tools, algorithms and data bases used in the field of bioinformatics. Sequence assembly and alignment algorithms, gene finding, protein structure prediction, analysis of gene expression data and methods for genome analysis. Heavily based on hands-on computer laboratories. *Prerequisite: BIS 181*.

COURSE DESCRIPTIONS

BIS 183: Population Genetics [4]

This course will study the various factors that affect gene flow and frequency within a population. Theories of selection, drift, hitchhiking, isolation, in-breeding and selfish genetic elements will be taught along with statistical tests and experimental methods for detecting these forces. *Prerequisites: BIS 140, Math 21.*

BIS 185: Biomedical Ethics [3]

Ethical issues associated with contemporary biology and the complex relationships among medicine, science and society.

Genetic engineering, cloning and stem cell research. *Prerequisite: BIS 1 or BIS 3.*

BIS 190: Research Seminar [1]

Student-led presentations of current topics in biological sciences, including independent research presentations. *Prerequisite: Upper division standing and consent of instructor.*

BIS 195: Research Projects in Biological Sciences [1 -6]

Group or individual research projects in the biological sciences under the direction of a BIS faculty member. *Prerequisites: Upper division standing and consent of instructor.*

BIS 198: Directed Group Study in Biological Sciences [1 - 6]

Group directed study in the biological sciences under the guidance of a BIS faculty member. *Prerequisites: Upper division standing and consent of instructor.* P/NP grading only.

BIS 199: Directed Independent Study in Biological Sciences [1 - 5]

Independent study in the biological sciences under the direction of a BIS faculty member. *Prerequisites: Upper division standing and consent of instructor.* P/NP grading only.

CHEMISTRY

Lower Division Courses

CHEM 1: Preparatory Calculus and Chemistry [3]

Preparation for calculus and chemistry. Elementary functions, trigonometry, polynomials, rational functions, systems of equations and analytical geometry. Units of measurement, dimensional analysis, significant figures; elementary concepts of volume, mass, force, pressure, energy, density, temperature, heat, work; fundamentals of atomic and molecular structure; the mole concept; stoichiometry; properties of the states of matter; gas laws; solutions, concentrations. CHEM 1 satisfies no requirements other than contribution to the 120 units required for graduation. Designed for students who need additional help prior to enrollment in

additional help prior to enrollment in Calculus (MATH 21) and General Chemistry (CHEM 2).

CHEM 2: General Chemistry [4]

Atoms, molecules, and stoichiometry; periodic properties; chemical equations; concepts of chemical bonding; Lewis structures; bond energies; atomic and molecular orbitals; solutions and measures of concentration; acid-base and solubility equilibria; thermochemistry; main group descriptive chemistry. Laboratories emphasize "green chemistry" concepts, using environmentally benign reagents and minimizing waste. Prerequisites: Passing score on chemistry placement exam.

CHEM 8: Principles of Organic Chemistry [4]

Molecular shapes and charge distributions; resonance; electron delocalization; organic structures, nomenclature, and isomerism; stereochemistry; optical activity; organic reactions; combinatorial synthesis; spin and NMR spectroscopy; intermolecular forces; amino acids, nucleotides, carbohydrates, and fatty acids; biopolymers; 3D structure of biomolecules. Laboratories emphasize "green chemistry" concepts, using environmentally benign reagents and minimizing waste. *Prerequisite: CHEM 2.*

CHEM 10: Principles of Physical Chemistry [4]

Gas properties; entropy; free energy; chemical kinetics: rate laws, temperature dependence, catalysis, enzymes; diffusion and transport; oxidation-reduction and electrochemistry; nuclear chemistry; quantum mechanics; molecule-radiation interactions; electronic and vibrational spectroscopy; coordination compounds; solids and liquids; salts, metals, and semiconductors; mass spectrometry; diffraction.

Laboratories emphasize "green chemistry" concepts, using environmentally benign reagents and minimizing waste. *Prerequisite: CHEM 2*.

CHEM 90X: Freshman Seminar [1] Examination of a topic in chemistry.

CHEM 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

CHEM 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

CHEM 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

CHEM 100: Organic Synthesis and Mechanism [3]

Reactions, syntheses, purification and characterization of all the major classes of organic compounds. Includes reaction mechanisms, multistep syntheses and combinatorial methods. *Prerequisites: CHEM 8, CHEM 10.*

CHEM 100 L: Advanced Organic/Inorganic Laboratory [2]

Laboratory experiments in synthetic methods and chemical and spectroscopic characterization of organic and inorganic compounds. Emphasis on microscale techniques. *Prerequisite: CHEM 100 [may be taken concurrently].*

CHEM 110: Biochemistry I [4]

Introduction to the chemical processes underlying life, covering the structure and properties of biological macromolecules, metabolism, regulation and energy transduction. *Prerequisites: CHEM 8, BIS 1, ICP 1 (or equivalent). Cross-listed with BIS 100.*

CHEM 111: Biochemistry II [4]

Advanced course on enzyme mechanisms and regulation. *Prerequisite: CHEM 110 or BIS 100. Cross-listed with BIS 101.*

CHEM 111L: Biochemistry Lab [1]

Laboratory experiments demonstrating and reinforcing topics covered in CHEM 111. Prerequisite: CHEM 111 or BIS 101 [must be taken concurrently]. Cross-listed with BIS 101L.

CHEM 112: Quantum Chemistry and Spectroscopy [3]

Theory and practical application of molecular quantum mechanics. Schrödinger equation and matrix representations of quantum mechanics; simple exactly solvable model problems; calculation of observable properties; vibrational and electronic wave functions; approximation methods; quantum mechanics of spectroscopy. *Prerequisites: CHEM 10, MATH 25, PHYS 9 (or equivalent).*

CHEM 113: Chemical Thermodynamics and Kinetics [3]

Statistical mechanics, thermodynamics and chemical kinetics, taught from a perspective that develops the behavior of bulk matter from molecular properties.

Prerequisite: CHEM 112.

CHEM 114L: Physical Chemistry and Instrumental Analysis Laboratory [2]

Laboratory experiments in spectroscopy, electrochemistry, separations and kinetics, including biochemical and biophysical applications. *Prerequisite: CHEM 115 [may be taken concurrently].*

CHEM 115: Instrumental Analysis and Bioanalytical Chemistry [3]

Spectroscopic, electrochemical and separation methods of chemical analysis including bioanalytical techniques. *Prerequisites: CHEM 8, CHEM 10.*

CHEM 120: Inorganic Chemistry [3]

Descriptive inorganic chemistry, reactivity, inorganic spectroscopy, group theory and crystallography. *Prerequisites: CHEM 8, CHEM 10.*

CHEM 130: Organic Spectroscopy and Computation [3]

Modern methods and tools employed for the determination of organic molecular structure including NMR [1D and 2D FT], IR and UV spectroscopy. Applications of quantum mechanical concepts and methods to understand and predict organic structures and reactivities. Computational modeling methods, including force field and quantum mechanical computer calculations. *Prerequisite: CHEM 100.*

CHEM 131: Molecular Spectroscopy [3]

Time-dependent quantum mechanics; interaction of radiation with matter; electronic spectra of atoms and molecules; vibrational, rotational, and Raman spectra; magnetic resonance spectroscopy; X-ray, neutron and electron diffraction.

Prerequisite: CHEM 112.

CHEM 133: Biophysical Chemistry [3]

Biochemical kinetics, solution thermodynamics of biochemical systems, multiple equilibria, hydrodynamics, energy levels, spectroscopy, and bonding. Three-dimensional structure of proteins, forces that stabilize protein structures, protein folding, prediction of protein structure from sequence. Three-dimensional structure of DNA and RNA, sequence-specific recognition of DNA and RNA, RNA-catalyzed processes. *Prerequisites: CHEM 111 or BIS 101, CHEM 113*.

CHEM 140: Nanoscale Materials Chemistry [3]

An introduction to the properties of matter on size scales intermediate between atoms or molecules and bulk matter, with emphasis on metallic and semiconductor nanoparticles. Synthesis, characterization, physical and chemical properties, and applications of these materials. Prerequisites: CHEM 100, 113, 120 [all may be taken concurrently].

CHEM 145: Applied and Biomolecular Spectroscopy [3]

Application and interpretation of spectroscopic methods to problems in chemical structure and analysis with a particular emphasis on biomolecules. Topics include UV/visible absorption, fluorescence, infrared absorption, Raman scattering, nuclear magnetic resonance, electron spin resonance, circular dichroism, mass spectrometry, microspectroscopic and singlemolecule techniques. *Prerequisite: CHEM 115*.

CHEM 147: Materials Chemistry Laboratory [3]

Materials synthesis and physical properties of complex materials. Combines synthetic skills with fundamental physical understanding and characterization in approximately equal proportions to relate materials synthesis to materials function.

Prerequisites: CHEM 100L; CHEM 113 (may be taken concurrently).

CHEM 190: Advanced Topics in Chemistry [3]

In-depth treatment of a timely, advanced topic in chemistry as selected by the faculty. More than one section covering different topics may be offered. *Prerequisite: Consent of instructor.*

CHEM 195: Upper Division Undergraduate Research [1-4]

Supervised research. *Permission of instructor required.*

CHEM 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

CHEM 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

COGNITIVE SCIENCE

Lower Division Courses

COGS 1: Introduction to Cognitive Science [4]

An introduction to the interdisciplinary field of cognitive science. Basic issues related to cognition, including perception, memory, language, learning, problem solving, spatial cognition, attention, mental imagery, consciousness, brain damage, development and artificial intelligence, are considered from the perspectives of psychology, philosophy, computer science and neuroscience.

COGS 5: Introduction to Language and Linguistics [4]

An introduction to the scientific study of language. Topics include phonology, phonetics, syntax, semantics, pragmatics, sociolinguistics, psycholinguistics, historical linguistics, language acquisition and natural discourse.

COGS 90X: Freshman Seminar [1]

Examination of a topic in the cognitive sciences.

COGS 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

COGS 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

COGS 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

COGS 101: Mind, Brain and Computation [4]

A course that further explores the issues covered in COGS 1, but with greater emphasis on computation, brain structure, neurological deficits and the connection between mind and brain. *Prerequisite:* COGS 1.

COGS 102: Introduction to Cognitive Modeling [4]

An introduction to the use of computer programs in modeling and cognitive phenomena. Some proficiency in a high-level programming language [C, Java, Lisp, etc.] will be assumed. Symbolic artificial intelligence, neural networks, genetic algorithms and computer graphics. *Prerequisites:* COGS 1, one course in computer programming.

COGS 103: Introduction to Neural Networks in Cognitive Science [4]

Introduction to the use of neural networks in the study of cognitive phenomena. Perception, attention, language, memory and biologically realistic model neurons. *Prerequisite: COGS 102.*

COGS 110: Philosophy of Cognitive Science [4]

Consideration of philosophical and foundational issues in cognitive science, including the Turing Test, the Chinese Room argument, the nature of cognitive architecture, animal cognition, connectionism vs. symbolic artificial intelligence and the possibility of thinking machines. *Prerequisites: PHIL 1, COGS 1 or consent of instructor. Cross-listed with PHIL 110.*

COGS 150: Language, Cognition and Interaction [4]

Examines the interactive nature of language. Discussion focuses on the extent to which perception, memory and other nonlinguistic processes interact with language and the way people use language to interact in everyday situations. Conversational language, gesture, speech disfluencies, figurative language, spatial language, childparent interaction, speech recognition and human-computer processing. The course integrates research from psychology, linguistics, sociolinguistics and human-computer interaction. Research project required. *Prerequisites: COGS 1, COGS 5.*

COGS 155: Language Acquisition [4]

A comprehensive survey of the theories, methods and findings on first and second language acquisition. *Prerequisites: COGS 1, COGS 5.*

COGS 180: Topics in Cognitive Science [4]

A variety of topics in cognitive science are offered. *Prerequisite: COGS 1.*

COGS 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

COGS 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

COGS 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

COLLEGE ONE CORE COURSES

Lower Division Courses

CORE 1: The World at Home – Planning for the Future in a Complex World I [4]

This course provides a foundation for UC Merced's general education program and has a strong emphasis on writing, quantitative literacy, critical thinking and understanding events in their historical and cultural contexts. The inaugural theme will be a study of how individuals and societies can make the best choices in preparing for an uncertain future. The unifying theme in these modules will be contemporary California which will act as a common reference point highlighting the regional implications of global events or the global consequences of seemingly local choices. A wide range of interdisciplinary perspectives from the arts, humanities, social sciences, life and physical sciences, and engineering will be brought to bear on the course topics. Prerequisite: Satisfaction of University of California Entry Level Writing Requirement.

Upper Division Courses

CORE 100: The World at Home – Planning for the Future in a Complex World II [4]

This course is the second half of the Core Course sequence, building on the foundation of UC Merced's general education program and has a strong emphasis on writing, quantitative literacy, critical thinking and understanding events in their historical and cultural contexts. The inaugural theme will be a study of how individuals and societies can make the best choices in preparing for an uncertain future. The unifying theme in these modules will be contemporary California which will act as a common reference point highlighting the regional implications of global events or the global consequences of seemingly local choices. A wide range of interdisciplinary perspectives from the arts, humanities. social sciences, life and physical sciences, and engineering will be brought to bear on the course topics. Upper-division-level quantitative literacy skills and writing ability is expected. Prerequisite: CORE 1 or junior standing.

COMPUTER SCIENCE AND ENGINEERING

Lower Division Courses

CSE 1: Programming I [3]

Fundamentals of computer programming, including basic algorithms, programming styles, program validation and debugging. Major compound data types including arrays, queues, tuples, stacks, binary trees and linked lists.

CSE 2: Programming II [3]

Intermediate computer programming, including concepts of recursion, functional and object- oriented programming. Classes and objects, abstraction, inheritance, operator overloading and data localization. *Prerequisite: CSE 1.*

CSE 20: Introduction to Computing I [2]

This course is designed to give students comprehensive introduction to computing using quantitative examples. Fundamentals of computer programming, including basic algorithms, programming styles, program validation, debugging and Methods Objects. Major compound data types including arrays, queues, tuples, stacks, binary.

CSE 21: Introduction to Computing II [2]

This course is the continuation of CSE 20. Intermediate computer programming, including concepts of recursion, functional and object-oriented programming. Classes and objects, abstraction, inheritance, operator overloading, data localization, interfaces, trees and linked lists. *Prerequisite: CSE 20.*

CSE 30: Introduction to Computer Science and Engineering I [3]

Overview of the diverse field of computer science and engineering. In-depth analysis of several key inventions in the field that have been instrumental in advancing CSE and driving worldwide technical growth.

CSE 31: Introduction to Computer Science and Engineering II [3]

Overview of the diverse field of computer science and engineering. In-depth analysis of several key inventions in the field that have been instrumental in advancing CSE and driving worldwide technical growth. *Prerequisite: CSE 30.*

CSE 90X: Freshman Seminar [1]

Examination of a topic in computer science and engineering.

CSE 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

CSE 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P /NP grading only.

CSE 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

CSE 100: Algorithm Design and Analysis [4]

Introduction to the design and analysis of computer algorithms. Theoretical models of computation, concepts of algorithm complexity, computability and NP-completeness. Major algorithms and data structures for searching, sorting, parsing and memory management. *Prerequisite: CSE 2.*

CSE 111: Database Systems [4]

Principles of database design and operation. Major types of databases, including flat-file, hierarchical, relational and object-oriented. Database-querying languages, database security and special issues related to the www-based database systems. *Prerequisite: CSE 100.*

CSE 120: Software Engineering [4]

Modern engineering techniques for developing reliable, efficient, reusable and maintainable computer software. Primary software design models, including functional, structured and object-oriented programming. Software validation, revision control, project management and documentation. *Prerequisite: CSE 100.*

CSE 140: Computer Architecture [4]

Fundamental concepts of digital computer design, including instruction sets, memory systems and registers, logic and mathematics units, and off-cpu communication and control. Diversity of contemporary computer designs. *Prerequisite: CSE 2.*

CSE 150: Introduction to Operating Systems [4]

Concepts of computer operating systems including memory management, file systems, multitasking, performance analysis and security. *Prerequisite: CSE 2.*

CSE 160: Networking [4]

Design concepts and implementation features of computer networks. Network robustness, scalability, addressing, routing and security. Several contemporary networking protocols will be analyzed. *Prerequisite: CSE 150.*

CSE 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

CSE 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

CSE 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

EARTH SYSTEMS SCIENCE

Lower Division Courses

ESS 1: Introduction to Earth Systems Science [4]

An introduction to basic principles of earth systems for non-science majors and prospective majors. A multidisciplinary approach that draws from geology, chemistry, physics and biology to understand how the earth functions as a complex system, and the role and impact of human beings on earth systems.

ESS 5: Introduction to Biological Earth Systems [4]

An introduction to basic principles of coupled biological and earth systems for non-science majors and prospective majors. An interdisciplinary approach that combines concepts from biology and earth science to understand how the Earth functions as a biological incubator, the origin and evolution of molecular life, the rise of complex biological and ecological earth systems, human impacts and the sustainable earth.

ESS 10: Earth and Society [4]

We are users and changers of our planet. This course discusses the materials and resources our planet supplies to human society, the impact of natural disasters on human history, and anthropogenic influences on climate, land use and sustainable resources.

ESS 20: Fundamentals of Earth Processes [4]

Fundamentals of earth science with focus on terrestrial, marine and atmospheric systems through time; surface geological processes (plate tectonics, lithosphere cycling, weathering, erosion, sedimentation, landscape and soil formation); material and heat transport in atmosphere-ocean-lithosphere systems; paleoclimatic and paleoenvironmental dynamics and their relation to tectonic processes. *Prerequisites: ESS 1 or ESS 5 or BIS 1; CSE 21; ICP 1 (or equivalent)*.

ESS 25: Introduction to Ecosystem Science [4]

Fundamentals of ecosystem science; organization, function and development of ecological systems; energy and mass flow; biogeochemical cycling; biodiversity; population dynamics; and sustainability.

Prerequisites: ESS 1 or ESS 5 or BIS 1; ICP 1 (or equivalent).

ESS 40: Air Quality, Air Resources, and Environmental Health [4]

A survey of principles and issues related to air quality and resources from global to regional scales, including evolution of the earth's atmosphere, urban smog formation, visibility, acid rain, stratospheric and tropospheric ozone, effects of meteorology on air pollution, air pollution transport across political boundaries, and health effects of exposure to air pollution.

ESS 50: Ecosystems of California [4]

An introduction to ecological principles and processes through the examination of California's varied ecosystems; discussion of native and invasive species, land use, human impacts and biodiversity; two Saturday field trips to unique California habitats.

ESS 60: Global Environmental Change [4]

History, causes, and consequences of anthropogenic and natural changes in the atmosphere, oceans and terrestrial ecosystems; geologic evidence for glacial cycles and climate changes, modern marine and atmosphere circulation, greenhouse gases, deforestation and species extinctions, and human population growth and impacts on climate and resources.

ESS 70: Soil Foundations of Terrestrial Ecosystems [4]

This course will examine the physical, chemical and biological properties of soils that influence terrestrial and freshwater ecosystems. Topics will include processes that control soil formation, evolution, development and chemical properties. Particular emphasis will be placed on the quantitative descriptions of energy nutrient and contaminant fluxes into, out of and through soils. *Prerequisites: ESS 1 or BIS 1; CHEM 8.*

ESS 90X: Freshman Seminar [1]

Examination of a topic in earth systems science

ESS 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

ESS 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

ESS 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

ESS 100: Environmental Chemistry [4]

Chemical principles of Earth and environmental systems focusing on environmental processes in water, soil and air. Emphasis on acid-base chemistry, aqueous speciation, mineral and gas solubility, oxidation and reduction, and isotopes. *Prerequisites:* CHEM 8, ICP 1 (or equivalent). Cross-listed with ENVE 100.

ESS 102: Chemical Processes in the Soil Environment [3]

Thermodynamics and kinetics of chemical process in soil systems. Topics include the formation and identification of common minerals, adsorption/desorption, precipitation/dissolution and electrochemical reactions in soils. *Prerequisite: ENVE/ESS 100.*

ESS 103: Geochemistry of Earth Systems [3]

Quantitative analysis of Earth systems using principles of thermodynamics, kinetics and isotope geochemistry; solution-mineral equilibrium and phase relations; equilibrium and reactive transport approaches to modeling geochemical processes at ambient and elevated temperatures. *Prerequisite: ENVE/ESS 100.*

ESS 104: Organic Geochemistry [3]

Focus on organic chemical reactions in soils and sedimentary environments. Formation and weathering of natural organic matter and reactions of natural organic matter with pollutants. *Prerequisite: ENVE/ESS 100.*

ESS 105: Watershed Biogeochemistry [3]

Movement, storage and transformations involving water, nutrients and solutes in natural and human impacted watersheds; biological and chemical processes; modeling of biogeochemical processes. Interactions of watersheds with lakes and streams. *Prerequisites: ENVE/ESS 100, ENVE/ESS 110.*

ESS 106: Spectroscopic and Microscopic Methods [3]

Application of advanced spectroscopic and microscopic methods to the study of Earth materials, aqueous systems and aqueous-solid interfaces. *Prerequisite: ENVE/ESS* 100.

ESS 108: Surface and Colloid Chemistry of Earth Materials [3]

Surface, colloid and interfacial chemistry related to soil, environmental and microbial applications; properties, energetics and reactivity of surfaces and interfaces of Earth materials; the role of mineral surfaces in promoting and catalyzing chemical phenomena at phase boundaries. *Prerequisite: ENVE/ESS 100.*

ESS 109: Chemistry and Mineralogy of Earth Materials [3]

Chemical principles, structure and bonding of minerals and Earth materials, including crystallography (symmetry, space groups, group theory), coordination chemistry, bonding models (valence bond, crystal field, and MO theories), and electronic and magnetic properties. *Prerequisites: ESS* 100 or CHEM 010. Cross-listed with ES 209

ESS 110: Hydrology and Climate [4]

Basics of the hydrological cycle and the global climate system. Fundamentals of surface water hydrology, hydrometeorology, evaporation, precipitation, statistical and probabilistic methods, unit hydrograph and flood routing. *Prerequisite: ENVE 20 or ESS 20. Cross-listed with ENVE 110.*

ESS 120: Geomicrobiology [4]

Fundamentals of microbiology related to earth systems, including biogeochemical cycling, microbial metabolism and biodiversity, soil food webs and genomics.

Prerequisites: CHEM 8, ICP 1 (or equivalent).

ESS 124: Ecology and Ecosystems [4]

Ecology and ecological principles; organization, dynamics and mathematical models of population and communities; biodiversity; environmental scaling; and spatial analysis. *Prerequisite: ESS 20 or ESS 25*.

ESS 125: Microbial Ecology [4]

Advanced course in microbiological systems and techniques. *Prerequisite: ESS* 120.

ESS 126: Environmental Genomics [4]

Introduction to the principles and methods of genomics as applied to the understanding of ecosystems. Population genetics, adaptation to environmental change and genomic analysis of environmental microbial communities; experimental and computational methods relevant to environmental genomics. *Prerequisite: BIS 141 or ESS 120.*

ESS 128: Theoretical Ecology [4]

Advanced course on the application of theoretical and quantitative methods for the analysis and interpretation of populations, communities and ecosystems. *Prerequisites: ESS 20 or ESS 25.*

ESS 131: Atmospheric Chemistry and Physics [4]

Chemistry and physics of the troposphere and stratosphere, including atmospheric aerosols. *Prerequisite: ESS 20 or ENVE 20.*

ESS 132: Climatology [3]

The global and surface energy balance; the hydrologic cycle; the influence on climate of the atmospheric and oceanic circulation; climate history, sensitivity, modeling and natural and anthropogenic change. *Prerequisite: ESS 110. Cross-listed with ES 232.*

ESS 150: Geomorphology and Surface Processes [4]

Observation and analysis of earth surface processes and the development of land-forms and landscape. The interaction between surficial processes and tectonic, biologic, hydrologic, climatic and atmospheric processes. Evaluation of environmental hazards and engineering solutions. *Prerequisite: ESS 20 or ENVE 20.*

ESS 180: Field Methods in Earth Systems [4]

Field techniques in chemistry, hydrology, geology, ecology and microbiology, emphasizing principles of measurement, observation and interpretation; integration of diverse data sets. *Prerequisites: CHEM 8, ICP 1 (or equivalent).*

ESS 190: Undergraduate Seminar [1]

Weekly seminar of current topics in earth and environmental systems. *Prerequisite: Upper division standing.*

ESS 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

ESS 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

ESS 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

ECONOMICS

Lower Division Courses

ECON 1: Introduction to Economics [4]

Introduction to economics principles and methods, including microeconomics (operation of the economy at the individual and firm level) and macroeconomics (nature and functions of the national economy in a global context).

ECON 10: Analysis of Economic Data [4]

Introduction to observation, estimation and hypothesis testing in economics; use of linear regression models.

ECON 11: History of Economic Thought [4]

Prerequisite: ECON 1.

A survey of the theories of major economists from Adam Smith to Keynes. *Prerequisite: ECON 1.*

ECON 90X: Freshman Seminar [1]

Examination of a topic in economics.

ECON 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

ECON 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

ECON 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

ECON 100: Intermediate Microeconomic Theory [4]

Price determination and resource distribution theory under conditions of perfect and imperfect competition. General equilibrium and welfare economics.

Prerequisites: ECON 1, MATH 21 or equivalent, or consent of instructor.

ECON 101: Intermediate Macroeconomic Theory [4]

Analysis of output, employment, interest rates and the price level. Effects of these on changes in monetary and fiscal variables. Prerequisites: ECON 1, MATH 21 or equivalent or consent of instructor.

ECON 111: American Economic History [4]

A survey of trends in the American economy; emphasis on factors explaining economic growth and on the changing distribution of the gains and losses associated with growth. *Prerequisite: ECON 100.*

ECON 115: Economics of Industrial Organization [4]

The organization and structure of industrial production in the United States economy. *Prerequisite: ECON 100.*

ECON 120: Economics of the Environment [4]

Analysis of public policy measures that pertain to human environments. *Prerequisite: ECON 100.*

ECON 130: Econometrics [4]

Introduction of problems of observation, estimation and hypotheses testing in economics through the study of the theory and application of linear regression models, critical evaluation of selected examples of empirical research, and exercises in applied economics. *Prerequisites: ECON 10, MATH 21 or equivalent.*

ECON 140: Labor Economics [4]

Analysis of the economic forces that shape labor markets, institutions and performance in the United States and other countries, with special attention to trade unions, legal regulations and social conventions. *Prerequisite: ECON 100*.

ECON 145: Health Economics [4]

An economic analysis of policies and institutions in the U.S. health care sector: supply and demand for health services, conceptual and policy issues relating to health insurance, and economic analysis of efficient regulatory policies toward the health care sector. *Prerequisite: ECON 100*.

ECON 150: Economic Development [4]

Problems of underdevelopment and poverty, policy issues and development strategy. *Prerequisite: ECON 100.*

ECON 151: Public Economics [4]

Influence of governmental revenue and expenditure decisions on economic performance. Issues such as public goods and externalities, as well as specific expenditure and taxation programs. *Prerequisite: ECON 100.*

ECON 152: Law and Economics [4]

Economic analysis of legal rules and institutions, including property, contract and tort law. Also, issues surrounding crime and punishment. *Prerequisite: ECON 100*.

ECON 155: Political Economics [4]

Tools of political economics: Preferences and institutions, electoral competition, agency, partisan politics. Redistributive politics: general interest politics, special interest politics. Comparative politics: electoral rules, separation of powers, political regimes. Dynamic politics: fiscal policy, growth. *Prerequisite: ECON 100*.

ECON 160: International Microeconomics [4]

International trade theory: Impact of trade on the domestic and world economies; public policy toward external trade. *Prerequisite: ECON 100.*

ECON 161: International Macroeconomics [4]

Macroeconomic theory of an open economy. Balance of payments adjustment mechanism, international monetary economics issues, international financial institutions and their policies. *Prerequisite: ECON 101*.

ECON 162: Financial Economics [4]

The course explores the valuation of assets including stocks, bonds, options, and futures contracts using modern financial theoretical models, including CAPM and APT. Optimal portfolio selection and risk management issues are also explored. *Prerequisite: ECON 100.*

ECON 190: Topics in Economics [4]

Intensive treatment of a special topic or problem in economics. May be repeated for credit in different subject area. *Prerequisites: ECON 1, junior or senior standing, major in SCS in the economics track or consent of instructor.*

ECON 191: Fieldwork in Economics [1-3]

Supervised field studies in economics. Prerequisites: ECON 1; junior or senior standing; major in SCS in the economics track or consent of instructor.

ECON 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required*.

ECON 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

ECON 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

EDUCATION

Lower Division Courses

EDUC 10: The Essentials of Educational Practice and Policy [4]

Introduction to key elements in education: teaching and learning, school organization, education policy, politics and philosophical goals of education. Topics include: educational reform, testing and accountability, school finance, student diversity and bilingual education. Focus will be on California's education system, with comparative perspectives from other states and countries.

EDUC 90X: Freshman Seminar [1] Examination of a topic in Education.

ENGINEERING

Lower Division Courses

ENGR 45: Introduction to Materials [4]

Relationships of the structure, processing, properties and performance of materials. Application of physical and chemical principles in the context of engineering materials: atomic bonding, crystal structure, defects, thermodynamics and kinetics. *Prerequisites: ICP 1 (or equivalent), CHEM 2 or consent of instructor.*

ENGR 50: Statics [2]

Vector operations, forces and couples, free body diagrams, equilibrium of a particle and of rigid bodies. Friction. Distributed forces. Centers of gravity and centroids. *Prerequisite: ICP 1 (or equivalent)*.

ENGR 51: Strength of Materials [3]

Stresses and strain in solids with symmetric and asymmetric loads. Stresses in pressure vessels and rotating shafts. Strength and failure, plastic deformation, fatigue and elastic instability. *Prerequisite: ICP 1 (or equivalent)*.

ENGR 52: Computer Modeling and Analysis [3]

Basic tools needed for the design and analysis of engineering systems, including data collection, basic algorithm design, implementation and testing, and systems simulation. *Prerequisites: CSE 1, MATH 10.*

ENGR 53: Materials and the Environment [4]

Impact of materials mining, processing, synthesis, use and disposal on the environment, including cost-benefit analyses of environmentally "friendly" vs. "unfriendly" materials. Energy properties, cost, durability, disposal and other considerations in materials selection. Materials challenges in fuel cell, battery, solar and water filtration applications. Environmental costs and benefits of emerging nanotechnologies. Prerequisites: ICP 1 (or equivalent), CHEM 2 or consent of instructor.

ENGR 57: Dynamics [2]

Kinematics and equations of motion of a particle for rectilinear and curvilinear motion. Planar kinematics of rigid bodies. Kinetics for planar motion of rigid bodies, including equations of motion and principles of energy and momentum.

Prerequisite: ICP 001 (or equivalent).

ENGR 90X: Freshman Seminar [1] Examination of a topic in engineering.

ENGR 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

ENGR 97: Service Learning: Engineering Projects in Community Service [1-3]

Multi-disciplinary teams of freshman through senior students work with community organizations to design, build and implement engineering-based solutions for real-world problems. Students gain insight into the design and development process. Students are encouraged to participate for two or more semesters at the lower division [ENGR 97] and upper division [ENGR 197] levels. Prerequisite: Completion of first freshman semester. Permission of instructor required.

ENGR 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

ENGR 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

ENGR 120: Fluid Mechanics [4]

Introduction to and application of principles of mechanics to flow of compressible and incompressible fluids. *Prerequisite: ICP 1 (or equivalent).*

ENGR 130: Thermodynamics [4]

Fundamentals of equilibrium, temperature, energy and entropy. Equations of state and thermodynamic properties, with engineering applications. *Prerequisites: ICP 1* (or equivalent), CHEM 2.

ENGR 135: Heat Transfer [3]

Study of conduction, convection and radiation heat transfer, with applications to engineering problems. *Prerequisite: ENGR* 130.

ENGR 140: Introduction to Object Oriented Programming [3]

Object and database principles, including data models, access control, database systems architecture, functional data manipulation, database organizational design, indexing and performance analysis.

Prerequisites: CSE 1, MATH 10.

ENGR 155: Engineering Economics Analysis [3]

Microeconomic principles and methods. Time value of money, interest and equivalence, analysis of economic alternatives, depreciation, inflation and taxes, estimates of demand, cost and risk; decision theory.

ENGR 160: Discrete Math and Computer Modeling [3]

Combinatorics, graph theory, cryptography, discrete optimization, mathematical programming, coding theory, information theory, game theory, principles of computer science, including algorithms, complexity and performance modeling.

Prerequisites: CSE 1, ICP 1 (or equivalent).

ENGR 170: Introduction to Electron Microscopy [3]

Principles and techniques of electron microscopy used in the study of materials. Emphasis upon practical applications. Prerequisites: ICP 1 (or equivalent) or PHYS 9, introductory level knowledge of crystallography. Concurrent enrollment in ENGR 170 L is strongly encouraged.

ENGR 170L: Introduction to Electron Microscopy – Laboratory [1]

Laboratory for principles and techniques of electron microscopy used in the study of materials. Prerequisites: ICP 1 (or equivalent) or PHYS 9, introductory level knowledge of crystallography. Concurrent enrollment in ENGR 170 is strongly encouraged.

ENGR 180: Spatial Analysis and Modeling [4]

Principles of geographic information systems [GIS]; applications of GIS to environmental, water and resource management issues; problem solving with GIS. Other topics include spatial analysis interpolation techniques and model integration. *Prerequisites: CSE 21, MATH 10.*

ENGR 191: Professional Seminar [1]

Presentation and discussion of professional engineering practices. Professional ethics and the roles and responsibilities of public institutions and private organizations pertaining to engineering. *Prerequisite:* Permission of instructor required.

ENGR 197: Service Learning: Engineering Projects in Community Service [1]

Multi-disciplinary teams of freshman through senior students work with community organizations to design, build, and implement engineering-based solutions for real-world problems. Students gain insight into the design and development process. Students are encouraged to participate for two or more semesters at the lower division [ENGR 97] and upper division [ENGR 197] levels. *Prerequisite: Permission of instructor required.*

ENGR 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

ENGR 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Graduate Courses

ENGR 270: Introduction to Electron Microscopy [3]

Principles and techniques of electron microscopy used in the study of materials. Emphasis upon practical applications. Graduate requirements include additional assignments, quiz problems and a project. Prerequisites: ICP 1 (or equivalent) or PHYS 9, introductory-level knowledge of crystallography. Concurrent enrollment in ENGR 270L is strongly encouraged. Cross-listed with ENGR 170.

ENGR 270L: Introduction to Electron Microscopy Laboratory [1]

Laboratory for principles and techniques of electron microscopy used in the study of materials. Graduate requirements include additional laboratory reports and a research project. Prerequisites: ICP 1 (or equivalent) or PHYS 9, introductory-level knowledge of crystallography. Concurrent enrollment in ENGR 270 is strongly encouraged. Cross-listed with ENGR 170L.

ENGR 295: Graduate Research [1-6]

Supervised research in engineering. Prerequisites: Graduate standing and consent instructor. S/U grading only.

ENGR 298: Directed Group Study [1-6]

Group project under faculty supervision. Prerequisites: Graduate standing and consent instructor. S/U grading only.

ENGR 299: Directed Independent Study [1-6]

Independent project under faculty supervision. *Prerequisites: Graduate standing and consent instructor. S/U grading only.*

ENVIRONMENTAL ENGINEERING

Lower Division Courses

ENVE 10: Environment in Crisis [4]

Human effects on Earth's ecosystems, air and waters. Social and technological solutions to interacting pressures from environmental pollution, biodiversity loss, water pollution, climate warming and feeding Earth's population. Science and policy topics appropriate for students majoring in fields other than science or engineering. Not open to majors for credit.

ENVE 20: Introduction to Environmental Science and Technology [4]

Introduction to historical and current issues in the diverse field of environmental engineering. Principles of mass and energy balance. In- depth analysis of several key innovations from the field that have been instrumental in advancing the field. Design project. Prerequisites: CSE 21; MATH 10 [may be taken concurrently]; CHEM 2; ICP 1 (or equivalent).

ENVE 90X: Freshman Seminar [1]

Examination of a topic in environmental engineering.

ENVE 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

ENVE 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

ENVE 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

ENVE 100: Environmental Chemistry [4]

Chemical principles of Earth and environmental systems focusing on environmental processes in water, soil and air. Emphasis on acid-base chemistry, aqueous speciation, mineral and gas solubility, oxidation and reduction, and isotopes. *Prerequisites:* CHEM 8, ICP 1 (or equivalent). Cross-listed with ESS 100.

ENVE 110: Hydrology and Climate [4]

Basics of the hydrological cycle and the global climate system. Fundamentals of surface water hydrology, hydrometeorology, evaporation, precipitation, statistical and probabilistic methods, unit hydrograph and flood routing. *Prerequisite: ENVE 20 or ESS 20. Cross-listed with ESS 110.*

ENVE 112: Subsurface Hydrology [4]

Hydrologic and geologic factors controlling the occurrence and use of groundwater on regional and local scales. Physical, mathematical, geologic and engineering concepts fundamental to subsurface hydrologic processes. Introduction to groundwater flow and transport modeling, with emphasis on model construction and simulation. *Prerequisite: ENVE 110.*

ENVE 114: Mountain Hydrology of the Western United States [4]

Principles of snow formation, occurrence and measurement; components of evapotranspiration; runoff generation; groundwater recharge processes; water resource assessments; and resource management. Focus on California and the southwestern U.S. Design project. *Prerequisite: ENVE/ESS* 100.

ENVE 118: Global Change [4]

Detection of, adaptation to and mitigation of global climate change. Climate-change science, sources, sinks and atmospheric cycling of greenhouse gases. Societal context for implementing engineered responses. Assessment of options for responding to the threat of climate change. *Prerequisite: CHEM 2.*

ENVE 121: Environmental Microbiology [4]

Fundamentals of environmental microbiology: physiology, biochemistry, metabolism, growth energetics and kinetics, ecology, pathogenicity, and genetics, with application to both engineered and natural environmental systems. Specific applications to water, wastewater and the environmental fate of pollutants. *Prerequisites: BIS 1, ENVE 20.*

ENVE 130: Meteorology and Air Pollution [4]

Basic physics and thermodynamics of the atmosphere; fundamentals of atmospheric sciences important to environmental problems; chemistry and physics of atmospheric pollutants; visibility; air quality modeling; emissions; air pollution control strategies. *Prerequisite: ENVE/ESS 20.*

ENVE 132: Air Pollution Control [3]

Topics will include government regulations, design and economics of air pollution control for point and spatial sources, strategies for regional air pollution control and engineering solutions. Air pollution control for both point and mobile sources will be addressed in the context of case studies. *Prerequisite: ENVE 130.*

ENVE 140: Water Resources Planning and Management [3]

Basic concepts of and issues in water resources management, water resources planning, institutional and policy processes. Quantitative analytical methods in water resources planning and management; introduction to systems analysis, multi-objective planning and risk assessment. Design project. *Prerequisites: ENVE 20, ENGR 155*.

ENVE 152: Remote Sensing of the Environment [3]

Fundamentals of electromagnetic remote sensing, concepts of information extraction, and applications pertinent to environmental engineering and Earth systems science. Emphasis on water and other resource management topics. *Prerequisite: ENVE 20 or ESS 20.*

ENVE 160: Sustainable Energy [4]

Current systems for energy supply and use. Renewable energy resources, transport, storage and transformation technologies. Technological opportunities for improving end- use energy efficiency. Recovery, sequestration and disposal of greenhouse gases from fossil- fuel combustion. *Prerequisite: ENVE/ESS 20*.

ENVE 162: Modeling and Design of Energy Systems [3]

Concepts and applications of solar thermal processes; applications of solar collectors for water heating; active and passive building heating and cooling; fundamentals and design of wind energy systems; economics of solar energy. *Prerequisites: ENGR 135, ENGR 160, ENVE 160.*

ENVE 170: Contaminant Fate and Transport [3]

Properties and behavior of organic and metal contaminants in soils, groundwater, surface waters and air. Emphasis on phase transfer and transport for organic compounds; complexation and surface processes for metals. Modeling of environmentally important compounds, photochemical reactions, natural organic matter, sorption phenomena. *Prerequisite: ENVE 100*.

ENVE 176: Water and Wastewater Treatment [3]

Water treatment, use, reclamation and reuse. Introduction to modeling and designing treatment systems; both conventional and advanced technology. Use of mass balances for system evaluation and design. Design project. *Prerequisites: ENVE 20, ENVE 100, ENGR 120.*

ENVE 181: Field Methods in Snow Hydrology [1-3]

Properties and measurement of snow. Principles of snow metamorphism and melting. Field workshops. *Prerequisite: ENVEJESS 110.*

ENVE 182: Field Methods in Surface Hydrology [1-3]

Measurement and interpretation of data; stream gauging, hydrography and limnology exercises; evaporation studies; micrometeorological instruments and methods; discharge measurement; flood plain mapping; preparation of hydrologic reports. Field workshops. *Prerequisite: ENVE/ ESS 110*.

ENVE 183: Field Methods in Subsurface Hydrology [1-3]

Introduction to fundamental field instruments used for vadose zone and subsurface field investigations. Analysis of groundwater wells and of a (hypothetical) contaminated site. Field workshops. *Prerequisite: ENVE 112.*

ENVE 184: Field Methods in Environmental Chemistry [1-3]

Introduction to the fundamental field instruments used for environmental chemistry field investigations. Air, water and soil sample collection and preservation procedures. Particle separation and analysis, ion selective electrodes, colorimetric assays for nutrients and metallic species, extraction of organic species. Experimental design, measurements and interpretation of data. *Prerequisite: ENVE/ESS 100.*

ENVE 191: Professional Seminar [1]

Presentation and discussion of professional environmental and water resources engineering practices. Professional ethics and the roles and responsibilities of public institutions and private organizations pertaining to environmental engineering. Prerequisite: Permission of instructor required.

ENVE 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

ENVE 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

ENVE 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

ENVIRONMENTAL SYSTEMS

Graduate Courses

ES 200: Environmental Systems [3]

This course will explore linkages in environmental systems and tools to evaluate important features of those systems. This will be done by examining the characteristics of different Earth compartments (pedosphere, lithosphere, biosphere, atmosphere and hydrosphere) in terms of mass and energy balance, residence times and interactions. To provide a context, the course will examine how each of these compartments interacts with the global water cycle. *Prerequisite: Graduate standing*

ES 202: Chemistry and Mineralogy of Soils [3]

Thermodynamics and kinetics of chemical process in soil systems. Formation and identification of common minerals, adsorption/desorption, precipitation/dissolution, electrochemical reactions in soils. Graduate requirements include individual additional exercises and preparation of a research paper. *Prerequisite: Graduate standing.*

ES 203: Geochemistry of Earth Systems [3]

Quantitative analysis of Earth systems using principles of thermodynamics, kinetics and isotope geochemistry; solution-mineral equilibrium and phase relations; equilibrium and reactive transport approaches to modeling geochemical processes at ambient and elevated temperatures. Graduate requirements include individual student projects. *Prerequisite: Graduate standing.*

ES 204: Organic Geochemistry [3]

Focus on organic chemical reactions in soils and sedimentary environments. Formation and weathering of natural organic matter and reactions of natural organic matter with pollutants. Graduate requirements include individual additional exercises and preparation of a research paper. *Prerequisite: Graduate standing.*

ES 205: Watershed Biogeochemistry [3]

Movement, storage and transformations involving water, nutrients and solutes in natural and human impacted watersheds; biological and chemical processes; modeling of biogeochemical processes. Interactions of watersheds with lakes and streams. Graduate requirements include more in-depth investigation of one or more topics and preparation of paper. *Prerequisite: Graduate standing.*

ES 206: Spectroscopic and Microscopic Methods [3]

Application of advanced spectroscopic and microscopic methods to the study of earth materials, aqueous systems and aqueous-solid interfaces. Graduate requirements include individual additional exercises and preparation of a research paper. *Prerequisite: Graduate standing.*

ES 208: Surface and Colloid Chemistry of Earth Materials [3]

Surface, colloid and interfacial chemistry related to soil, environmental and microbial applications; properties, energetics and reactivity of surfaces and interfaces of earth materials; the role of mineral surfaces in-promoting and catalyzing chemical phenomena at phase boundaries. Graduate requirements include individual additional exercises and preparation of a research paper. *Prerequisite: Graduate standing.*

ES 209: Chemistry and Mineralogy of Earth Materials [3]

Chemical principles, structure and bonding of minerals and Earth materials, including crystallography (symmetry, space groups, group theory), coordination chemistry, bonding models (valence bond, crystal field, and MO theories), and electronic and magnetic properties. *Prerequisites: ESS 100, CHEM 010 or permission of the instructor. Cross-listed with ESS 109.*

ES 212: Subsurface Hydrology [4]

Hydrologic and geologic factors controlling the occurrence and use of groundwater on regional and local scales. Physical, mathematical, geologic and engineering concepts fundamental to subsurface hydrologic processes. Introduction to groundwater flow and transport modeling, with emphasis on model construction and simulation. Graduate requirements include completion of advanced analysis in problem sets, completion of a term paper or project, and development of project management skills in the course design project. *Prerequisite: Graduate standing.*

ES 214: Mountain Hydrology of the Western U.S. [4]

Principles of snow formation, occurrence, and measurement; components of evapotranspiration; runoff generation; groundwater recharge processes; water resource assessments; and resource management. Focus on California and the southwestern U.S. Design project. Graduate requirements include more in-depth investigation of one or more topics and preparation of paper. *Prerequisite: Graduate standing*.

ES 218: Global Change [4]

Detection of, adaptation to and mitigation of global climate change. Climate-change science, sources, sinks and atmospheric cycling of greenhouse gases. Societal context for implementing engineered responses. Assessment of options for responding to the threat of climate change. Graduate requirements include preparation of a detailed case analysis. *Prerequisite: Graduate standing.*.

ES 221: Environmental Microbiology [4]

Fundamentals of environmental microbiology: physiology, biochemistry, metabolism, growth energetics and kinetics, ecology, pathogenicity and genetics, with application to both engineered and natural environmental systems. Specific applications to water, wastewater and the environmental fate of pollutants. Graduate requirements include additional projects. *Prerequisite: Graduate standing.*

ES 225: Microbial Ecology [4]

Advanced course in microbiological systems and techniques. Graduate requirements include additional exercises and preparation of a research paper.

Prerequisite: Graduate standing.

ES 226: Environmental Genomics [4]

Introduction to the principles and methods of genomics as applied to the understanding of ecosystems. Population genetics, adaptation to environmental change, genomic analysis of environmental microbial communities; experimental and computational methods relevant to environmental genomics. Graduate requirements include additional exercises and preparation of a research paper. *Prerequisite: Graduate standing.*

ES 228: Ecological Modeling [3]

Advanced course on modeling population dynamics and the flow of energy and matter in ecosystems. Graduate requirements include additional exercises and preparation of a research paper. *Prerequisite: Graduate standing.*

ES 232: Climatology [3]

The global and surface energy balance; the hydrologic cycle; the influence on climate of the atmospheric and oceanic circulation; climate history, sensitivity, modeling, and natural and anthropogenic change.

Prerequisites: ESS 110 or permission of the instructor. Cross-listed with ESS 132.

ES 234: Air Pollution and Resources [3]

Chemistry and physics of atmospheric pollutants, urban air pollution, visibility, mitigation and resource economics.

Prerequisites: ESS 100 or permission of the instructor. Cross-listed with ESS 134.

ES 235: Heat Transfer [4]

Study of conduction, convection and radiation heat transfer, with applications to engineering problems. Graduate requirements include in-depth investigation of one or more topics and preparation of paper. *Prerequisite: Graduate standing.*

ES 240: Water Resources Planning and Management [3]

Basic concepts of and issues in water resources management, water resources planning, institutional and policy processes. Quantitative analytical methods in water resources planning and management; introduction to systems analysis, multi-objective planning and risk assessment. Design project. Graduate requirements include preparation of a detailed case analysis. *Prerequisite: Graduate standing.*

ES 252: Remote Sensing of the Environment [3]

Fundamentals of electromagnetic remote sensing, concepts of information extraction and applications pertinent to environmental engineering and Earth systems science. Emphasis on water and other resource management topics. Graduate requirements include in-depth investigation of one or more remote sensing applications and preparation of a paper. *Prerequisite: Graduate standing.*

ES 260: Sustainable Energy [4]

Current systems for energy supply and use. Renewable energy resources, transport, storage and transformation technologies. Technological opportunities for improving end-use energy efficiency. Recovery, sequestration and disposal of greenhouse gases from fossil-fuel combustion. Graduate requirements include preparation of a detailed case analysis. *Prerequisite: Graduate standing.*

ES 262: Modeling and Design of Energy Systems [3]

Concepts and applications of solar thermal processes; applications of solar collectors for water heating; active and passive building heating and cooling; fundamentals and design of wind energy systems; economics of solar energy. Graduate-level requirements include preparation of a detailed case analysis. *Prerequisite: Graduate standing.*

ES 270: Contaminant Fate and Transport [3]

Properties and behavior of organic and metal contaminants, in soils, groundwater, surface waters and air. Emphasis on phase transfer and transport for organic compounds; complexation and surface processes for metals. Modeling of environmentally important compounds, photochemical reactions, natural organic matter, sorption phenomena. Graduate-level requirements include preparation of a detailed case analysis. *Prerequisite: Graduate standing*.

ES 291: Environmental Systems Seminar [1-3]

Seminar on advanced engineering and science topics, environmental systems research, and relevant case studies. *Prerequisite: Graduate standing. S/U grading only.*

ES 295: Graduate Research [1-6]

Supervised research in environmental systems. *Prerequisites: Graduate standing and consent instructor. S/U grading only.*

ES 298: Directed Group Study [1-6]

Group project under faculty supervision. Prerequisites: Graduate standing and consent instructor. S/U grading only.

ES 299: Directed Independent Study [1-6]

Independent project under faculty supervision. *Prerequisites: Graduate standing and consent instructor. S/U grading only.*

HISTORY

Lower Division Courses

HIST 10: Introduction to World History to 1500 [4]

World History from the origins of civilization to the European encounter with the Americas. Major topics include the growth of human populations, the rise of empires and states, routes of trade and migration, the spread of ideas and religions, and the impact of human settlement upon the natural world.

HIST 11: Introduction to World History Since 1500 [4]

World history from the European encounter with the Americans to the present century. Major topics include colonization and decolonization, the rise of modern imperialism, capitalism and its opponents, urbanization and mass communication, technologies for war and peace, and the impact of human settlement upon the natural world. *Prerequisite: HIST 10*.

HIST 16: The Forging of the United States, 1607-1877 [4]

The history of the U.S. from colonial roots through the Civil War and Reconstruction. Major topics include the coming of the Revolution, the impact of slavery on the development of the United States, westward expansion and the creation of a distinctively American culture.

HIST 17: The Modern United States, 1877-Present [4]

The history of the United States from the Gilded Age through the early 21st century. Major topics include the impact of the Industrial Revolution on American life, the rise of the U.S. to a world power, the changing role of the federal government and the ongoing struggle for civil rights.

HIST 20: History of the American West, 1500-1849 [4]

Focus on the age of discovery, the idea of the frontier and the impact of westward expansion upon the indigenous people of the West.

HIST 21: History of the American West, 1850-2000 [4]

Major topics will include the settlement, exploitation and promise of the West, from Gold Rush-era California to the present day. *Prerequisite: HIST 20.*

HIST 90X: Freshman Seminar [1] Examination of a topic in history.

HIST 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

HIST 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

HIST 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

HIST 100: The Historian's Craft [4]

Focus will be upon the various techniques of research and writing used by historians, from Thucydides to the so-called revisionists of today's "culture wars," and the changing audience of the historian.

Prerequisite: Junior standing in the major, or permission of the instructor. Required of all History emphasis students in the WCH major.

HIST 130: Topics in World History: The Silk Road [4]

For millennia, monks, merchants, warriors and brides traveled a network of routes throughout Eurasia, exchanging religious beliefs, disease pathogens, foodstuffs and luxury goods. This interdisciplinary and multi-media course examines the Silk Road through maps, art, travel narratives, archaeological reports and other genres. *Prerequisite: HIST 10 and/or HIST 11 or equivalent, or permission of the instructor.*

HIST 131: Topics in National History [4]

In-depth study of a particular topic in the history of a nation. Possible topics include the social, cultural, economic or political history of that nation. Prerequisites: HIST 10 and 11 or HIST 16 and 17, or the equivalent of a two-semester lower division history survey; and HIST 100 [may be taken concurrently]; or permission of the instructor. May be repeated for credit up to three times with different topics.

HIST 132: Topics in Regional and State History [4]

In-depth study of a particular topic in the history of a region or state. Possible topics include the social, cultural, economic or political history of that region or state. Prerequisites: HIST 10 and 11 or HIST 16 and 17, or the equivalent of a two-semester lower division history survey; and WCH 100 [may be taken concurrently]; or permission of the instructor. May be repeated for credit up to three times with different topics.

HIST 133: Topics in the History of Migration and Immigration [4]

In-depth study of a particular topic in the history of migration and/or immigration. Possible topics include the origins and history of America's culturally diverse population with a focus on the experiences of European, Native, African, Chicano/Latino and Asian Americans. Prerequisites: HIST 10 and 11 or HIST 16 and 17, or the equivalent of a two-semester lower division history survey; and WCH 100 [may be taken concurrently]; or permission of the instructor. May be repeated for credit up to three times with different topics.

HIST 134: Topics in the History of Science and Technology: History of Cartography [4]

This highly visual course covers the interpretation of historical maps from East Asia, the Islamic world, Europe, and indigenous societies, and the relationship of map making traditions to state power, science, religion and other areas of thought and practice. The final unit of the course addresses GIS and mapping in the computer age. *Prerequisites: HIST 10 and HIST 11 or equivalent, or permission of the instructor.*

HIST 135: Topics in Environmental History [4]

In-depth study of a particular topic in environmental history. Possible topics include the impact of industrialization upon the natural world, the changing notion of "wilderness," the role of national parks, California's "water wars." Prerequisites: HIST 10 and 11 or HIST 16 and 17, or the equivalent of a two-semester lower division history survey; and HIST 100 [may be taken concurrently]; or permission of the instructor. May be repeated for credit up to three times with different topics.

HIST 136: Essence of Decision: Case Studies in History [4]

This course will examine the art and science of decision-making with specific examples from historical case studies. The focus will be upon the historical determinates of both successful and unsuccessful decisions, and upon decisions that had both foreign policy and domestic implications. *Prerequisites: History 16 or 17 or consent of instructor.*

HIST 150: The Cold War, 1941-1991 [4]

The political, cultural and intellectual history of America's confrontation with Communist at home and abroad, from U.S. entry into the second World War to the collapse of the Soviet Union and its aftermath. *Prerequisites: HIST 16 and 17 or equivalent, or permission of the Instructor.*

HIST 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

HIST 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

HIST 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

HUMAN BIOLOGY

Upper Division Courses

HBIO 190: Research Seminar [1]

Student-led presentations of current topics in human biology, including independent research presentations. *Prerequisites: Upper division standing and consent of instructor.*

HBIO 195: Research Projects in Human Biology [1 -5]

Group or individual research projects in human biology under the direction of a BIS faculty member and a faculty member from the School of Social Sciences, Humanities and Arts. *Prerequisites: Upper division standing and consent of instructor.*

HBIO 198: Directed Group Study in Human Biology [1 - 6]

Group directed study in human biology under the direction of a BIS faculty member and a faculty member from the School of Social Sciences, Humanities and Arts. *Prerequisites: Upper division standing and consent of instructor. PINP grading only.*

HBIO 199: Directed Independent Study in Human Biology [1 - 5]

Independent study in human biology under the direction of a BIS faculty member and a faculty member from the School of Social Sciences, Humanities and Arts. Prerequisites: Upper division standing and consent of instructor. P/NP grading only.

INTEGRATED CALCULUS AND PHYSICS

Lower Division Courses

ICP 1: Integrated Calculus and Physics I [8]

MATH 21 and PHYS 8 integrated as one course. Mathematics and physics are learned in parallel so that mathematics is given in the context of solving physical problems. Introduction to differential and integral calculus of a single variable along with introduction to forces, kinetics, equilibria, fluids, waves and heat. Emphasis on historic and logical connections between the two subjects. *Prerequisite: Pass calculus placement exam.*

LITERATURE

Lower Division Courses

LIT 20: Introduction to World Culture and Literature I [4]

Introduction to the connections between language, literature and culture over time and across national traditions through a variety of literary genres. Master works of world literature in their cultural contexts, through comparative analysis.

LIT 21: Introduction to World Culture and Literature II [4]

Introduction to the connections between language, literature and culture over time and across national traditions through a variety of literary genres. Master works of world literature in their cultural contexts, through comparative analysis. *Prerequisite: LIT 20.*

LIT 30: Introduction to American Literature I [4]

Survey of the history and major works of literature of the United States from colonial times to the present, with a special emphasis on the range of American cultural traditions in a comparative context.

LIT 31: Introduction to American Literature II [4]

Survey of the history and major works of literature of the United States from colonial times to the present, with a special emphasis on the range of American cultural traditions in a comparative context. *Prerequisite: LIT 30.*

LIT 32: American Women Writers [4]

This course will feature selected works of writers from pre-Columbian to the present, with an emphasis on social, cultural and historical constraints on women's arts; the rise in feminist artistic strategies; and contemporary trends in literary production. Includes some study of influences on American women writers. *Prerequisites: WRI 10.*

LIT 40: Introduction to British Literature I [4]

Survey of the history and major works of the literature of the British Isles from the Middle Ages to the present.

LIT 41: Introduction to British Literature II [4]

Survey of the history and major works of the literature of the British Isles from the Middle Ages to the present. *Prerequisite: LIT 40.*

LIT 42: British Women Writers [4]

From selected works of British women writers, course includes a variety of texts, from early religious treatises through the birth of the British novel and beyond. Students will study economic, social and cultural constraints, and examine the relationship between historical context and artistic production of women writers. *Prerequisite: WRI 10.*

LIT 50: Introduction to Hispanic Literature I [4]

Survey of the history and major works of Peninsular, Latin America and Latino literatures from the nineteenth century. Course will be conducted in Spanish. Prerequisites: Completion of SPAN 4, SPAN 11 or equivalent.

LIT 51: Introduction to Hispanic Literature II [4]

Survey of the history and major works of Peninsular, Latin America and Latino literatures since the nineteenth century. Course will be conducted in Spanish. *Prerequisite:* LIT 50.

LIT 55: Introduction to Portuguese and Brazilian Literature and Culture [4]

May be taught in Portuguese or Spanish. Emphasis on reading and discussion of literary texts representative of different literary movements and authors of the Luso-Brazilian world. Discussion of significant historical, social and cultural trends in the Portuguese-speaking world. The course focuses on Portugal, Azores, Portuguese Africa, the Portuguese in the United States and Brazil. *Prerequisite: LIT 51*.

LIT 61: Hispanic/Latino Children's Literature [4]

This course explores Latino and Hispanic children's literature from a theoretical and a cultural perspective. The course will study texts, contexts, illustrations, traditions, as well as issues related to publishing and marketing. In addition, special attention will be played to linguistic issues, including bilingualism and translation. This course will be taught in Spanish. Prerequisites: LIT 21 or LIT 31 and completion of SPAN 4, SPAN 11 or equivalent; or LIT 51

LIT 63: Hispanic Film and Popular Culture [4]

This course offers a theoretical and historical overview of Hispanic film and popular culture, including music, performing arts, traditional storytelling, mass entertainment, among others. Particular attention will be paid to connections with the arts and literature. Course, films and readings are given in Spanish. *Prerequisite: SPAN 100.*

LIT 67: Multicultural Children's Literature [4]

This course explores the field of children's literature from a theoretical and a cultural perspective. Readings include books from many cultural traditions as well as secondary sources on multiculturalism and cultural literacy. The course will cover texts, contexts, illustrations, traditions, as well as issues related to publishing and marketing.

LIT 90X: Freshman Seminar [1]

Examination of a topic in literature.

LIT 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

LIT 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

LIT 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

LIT 100: Engaging Texts: Introduction to Critical Practice [4]

An introduction to issues and approaches in literary theory and criticism, with an emphasis on applications of methods to selected literary texts. *Prerequisite: Junior standing in the major.*

LIT 110: Topics in World Literature [4]

Topics may include literature of one country or region of the world or comparisons of multiple literatures. *Prerequisites: LIT 20 and 21 or the equivalent of a two-semester lower division Literature survey; and LIT 100 [may be taken concurrently]; or permission of the instructor. May be repeated for credit up to three times with different topics.*

LIT 111: Empire, Postcolonial and Representation: Reading East and West [4]

Study though literature, film and mass media of emancipatory uprisings and post-colonial challenges of the last 200 years that unsettled the old Eurocentric and the U.S. colonial order. Will include Occidental readings on Asian and African cultures. Topics: racism, xenophobia, illegal migrations and terrorism. Strong interdisciplinary approach to case examination. *Prerequisite: LIT 21*.

LIT 112: Literature and History [4]

Course emphasizes historical contextualization of literature, including theoretical approaches such as Marxism, Post colonialism, Intellectual and Social Historicism. Course explores ways in which literary histories are written. Course may focus on a specific historical period in order to understand the distinct relationship among literature, history and cultural production. *Prerequisite: LIT 21*.

LIT 120: Topics in the Literature of Difference [4]

In-depth study of a literature of difference. Possible topics include African-American literature, Asian-American literature, Chicano/Chicana literature, Native American literature, women's literature. Prerequisites: LIT 20 and 21, LIT 30 and 31, LIT 40 and 41, or LIT 50 and 51 or the equivalent of a two-semester lower division Literature survey; and LIT 100 [may be taken concurrently]; or permission of the instructor. May be repeated for credit up to three times with different topics.

LIT 125: Literary Genres [4]

This course explores how individual literary genres articulate larger cultural, aesthetic and social issues. In addition, the course analyzes literary genres alongside other media in which those issues are also articulated, exploring differences and similarities in their treatment of those matters. *Prerequisites: LIT 21, LIT 31, LIT 41, OR LIT 51.*

LIT 130: Topics in American Literature [4]

In-depth study of a period, theme, et al. in American literature. *Prerequisites: LIT 20* and 21, *LIT 30* and 31, *LIT 40* and 41, or *LIT 50* and 51 or the equivalent of a two-semester lower division Literature survey; and LIT 100 [may be taken concurrently]; or permission of the instructor. May be repeated for credit up to three times with different topics.

LIT 131: American Literature of the Expanding Nation [4]

Focuses on the many narratives by which America constructed its "manifest destiny." Featured writers or works include: Bradford, Bradstreet, Edwards, early Native American texts, colonial captivity narratives and early exploration narratives, such as Cabeza de Vaca. Course examines writers who justified and critiqued westward expansion, from Twain to Steinbeck to Kingston.

LIT 133: New Voices in American Fiction and Poetry [4]

This course will provide an exploration of contemporary practices in the field of American literature. Students will study themes and forms in the fields of poetry, prose and fiction as they have been developed and interrogated by America's young and new writers. *Prerequisite: LIT 31 or 32*.

LIT 135: Literature and Culture of African Americans [4]

American literature from the slavery period through the Harlem Renaissance and into the present. The course will emphasize African American writers in the context of cultural history that influenced and often repressed their literary production, with special emphasis on specific discursive practices and the rise and fall of various literary movements. *Prerequisite: LIT 21 or IIT 31*

LIT 140: Topics in British Literature [4]

In-depth study of a period, theme, et al. in British literature. Prerequisites: LIT 20 and 21, LIT 30 and 31, LIT 40 and 41, or LIT 50 and 51 or the equivalent of a two-semester lower division Literature survey; and LIT 100 [may be taken concurrently]; or permission of the instructor. May be repeated for credit up to three times with different topics.

LIT 141: British Literature of the Expanding Empire [4]

Course looks at British colonial literature, from early travel narratives such as Behn's Oroonoko to Forster, Orwell and current writers. Emphasis is on understanding the processes by which literature helped to construct the idea of an empire. Attention is paid to relationships between postcolonial narratives and emerging character of colonized nations. *Prerequisite: LIT 41.*

LIT 143: New Voices in British Fiction and Poetry [4]

Exploration of contemporary practices in the field of British literature. Students will study themes and forms in the fields of poetry, prose and fiction as they have been developed and interrogated by young and new writers in Britain and Ireland. *Prerequisite: LIT 41*.

LIT 145: Plays and Poetry of Shakespeare [4]

Introduction to and analysis of Shakespeare's major plays and poetry. Prerequisites: LIT 20 and 21, LIT 30 and 31, LIT 40 and 41, or LIT 50 and 51 or the equivalent of a two-semester lower division Literature survey; and LIT 100 [may be taken concurrently]; or permission of the instructor.

LIT 146: Shakespeare: Early Works [4]

Selected work from Shakespeare's early period up to the middle works, between 1599 and 1604. *Prerequisite: LIT 40. Suggested: LIT 145.*

LIT 147: Shakespeare: Later Works [4]

Selected work from Shakespeare's middle works, between 1599 and 1604, until the end of his career. *Prerequisite: LIT 40.* Suggested: LIT 45.

LIT 150: Topics in Hispanic Literature [4]

In-depth study of Spanish literature of a single country, one or more countries in a comparative context, a period, et al. Prerequisites: LIT 20 and 21, LIT 30 and 31, LIT 40 and 41, or LIT 50 and 51 or the equivalent of a two-semester lower division Literature survey; and LIT 100 [may be taken concurrently]; or permission of the instructor. May be repeated for credit up to three times with different topics.

LIT 151: Golden Age Spanish Literature [4]

Study through theater, novel and poetry of Renaissance and Baroque Peninsular literature (1492-1680): poetry of Garcilaso, Lope de Vega and the Spanish Baroque Theater; Cervantes and the origins of the modern novel; Conceptism and Culteranism; and relevant Portuguese figures (e.g., Gil Vicente and Camões). Course will be conducted in Spanish.

LIT 152: The Transatlantic Baroque [4]

Course centers around Transatlantic exploration of Golden Age Spain and colonial Latin America. Special attention and analysis is paid to commerce and cultural contact, travel writing, center and periphery, literary representation, arts, music and other relevant cultural forms of the times. Course and readings will be conducted in Spanish. *Prerequisite: LIT 51*.

LIT 153: Spanish Literature from the Generation of '98 to the Present [4]

Survey from the Generation of '98, through Generation of '27, the Civil War, Francoist and Post-Francoist literature, to contemporary voices. The course takes a critical look at the constructions of Spain and "Spanishness," seeking to build a more complex understanding of its cultures. Course will be conducted in Spanish. *Prerequisite: LIT 51*.

LIT 155: Latin American Colonial Literature [4]

Selected readings on chronicles, poetry and theater from Columbus travel narratives to Fernández de Lizardi's *El periquillo sarniento*. Emphasis on understanding the various processes by which literature helped to construct the idea of identity and independence. Theoretical frame based on cultural studies: the relationship between knowledge and power, the text and its context. Course will be conducted in Spanish. *Prerequisite*: *LIT 51*.

LIT 156: Latin American Literature Since the Independence [4]

The course will primarily concentrate on Romantic poetry; Indigenist, Anti-slavery and Indianist novel: Martí, Rubén Darío and Modernismo; Rodó and the essayist of the early twentieth century; the novel of the Mexican Revolution; and the Latin American "Boom" and "Post Boom." Some selected readings on Brazilian literature after Dom Pedro Primeiro will be included. Course will be conducted in Spanish. *Prerequisite: LIT 51*.

LIT 157: Caribbean Literatures and Cultures [4]

Explores the cultures and literatures of the Hispanic Caribbean, including those of Cuba, Puerto Rico and the Dominican Republic. The course also entails an exploration of multiple cultural substrata (e.g. Spanish, African, Anglo-American, Native) as well as their current presence in the Caribbean islands. Course and readings will be conducted in Spanish. *Prerequisite: LIT 51*.

LIT 158: Transatlantic Modernismo [4]

Study through poetry, novel, essay and chronicle of principal characteristics of Spanish-American and Peninsular Modernismo. The course will examine the issue of the influence of Latin American writers in Spain (e.g. Rubén Darío, Gómez Carrillo), and the evolution of poets or prose writers out of Modernismo into the Generation of '98 (e.g. Antonio Machado) or into a unique, independent voice (e.g. Juan Ramón Jiménez, Valle-Inclán, Unamuno). Course will be conducted in Spanish.

LIT 159: Diasporas and Exiles in the Hispanic World [4]

Concentration on literary works of political exiles from oppressive regimes (e.g., Spain's Franco, Portugal's Salazar) and 70's and 80's South American dictatorships. Focus on diasporas produced by economical constraints in the U.S., Latin America and Spain. Strong interdisciplinary approach in examining of cases and ideas. Course is conducted in Spanish.

LIT 165: Great Writers [4]

In-depth examination of the works of a single writer, read in the original language of that writer. *Prerequisites: LIT 21, LIT 31, LIT 41, or LIT 51 or the equivalent of a two-semester lower division literature survey, or permission of the instructor.*

LIT 170: Topics in Language and Linguistics [4]

Topics may include linguistic theories, history of the English language. Prerequisites: LIT 20 and 21, LIT 30 and 31, LIT 40 and 41, or LIT 50 and 51 or the equivalent of a two-semester lower division Literature survey; and LIT 100 [may be taken concurrently]; or permission of the instructor. May be repeated for credit up to three times with different topics.

LIT 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

LIT 198:Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

LIT 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

MANAGEMENT

Lower Division Courses

MGMT 2: Case Study Seminar on Business and Management [1]

This seminar course surveys the field of business management. Invited speakers from local companies and public organizations will cover the business environment, human relations, technology in business, ethical behavior, global and economic forces, organization, quality, products and services, functional management, and current issues and developments. *Prerequisite: ECON 1*.

MGMT 25: Introduction to Finance and Accounting I [3]

A broad introduction to finance and accounting. Students will be equipped to draw up and interpret accounts and introduced to some key ideas of finance and auditing. The student will learn fundamental accounting concepts and how to apply them; record accounting entries, prepare accounts for different business entities and understand the differences between them and basic principles of auditing. *Prerequisite: ECON 1.*

MGMT 26: Introduction to Finance and Accounting II [3]

Continuation of MGMT 25. The course also covers the basic principles of capital project evaluation, working capital management and taxation. Students must enroll in this course in the semester following the one during which MGMT 25 is taken. *Prerequisite: MGMT 25*.

MGMT 90X: Freshman Seminar [1] Examination of a topic in management.

MGMT 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

MGMT 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

MGMT 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

MATHEMATICS

Lower Division Courses

MATH 5: Preparatory Calculus [3]

Preparation for calculus. Elementary functions, trigonometry, polynomials, rational functions, systems of equations and analytical geometry. This course is intended as preparation for MATH 21 (Calculus of a Single Variable I). Students are either self-selected into the course or are placed based on placement exam score.

MATH 15: Quantitative Literacy and Reasoning [4]

Probability and statistics, data analysis and display, mathematical reasoning to solve problems in social and physical science.

MATH 21: Calculus of a Single Variable I [4]

An introduction to differential and integral calculus of functions of one variable. Elementary functions such as the exponential and natural logarithm, rates of change and the derivative with applications to social and physical science. *Prerequisite:* Pass calculus placement examination.

MATH 22: Calculus of a Single Variable II [4]

A continuation of MATH 21. Analytical and numerical techniques of integration with applications, infinite sequences and series, first-order ordinary differential equations. Prerequisite: MATH 21 or ICP 1 (or equivalent)

MATH 23: Multi-Variable Calculus [4]

Calculus of several variables. Parametric equations and polar coordinates, algebra and geometry of vectors and matrices, partial derivatives, multiple integrals and introduction to the theorems of Green, Gauss, and Stokes. *Prerequisite: MATH 22*.

MATH 24: Introduction to Linear Algebra and Differential Equations [4]

Introduces ordinary differential equations, systems of linear equations, matrices, determinants, vector spaces, linear transformations and linear systems of differential equations. Prerequisites: MATH 22. Replaces MATH 25..

MATH 30: Mathematical Biology [4]

A version of Math 022 for students majoring in the life sciences. Analytical and numerical techniques of integration, first-order ordinary differential equations and methods in discrete math with applications to questions from biology and medicine. *Prerequisite: ICP 1 (or equivalent) or MATH 21.*

MATH 32: Probability and Statistics [3]

Concepts of probability and statistics. Conditional probability, independence, random variables, distribution functions, descriptive statistics, transformations, sampling errors, confidence intervals, least squares and maximum likelihood. Exploratory data analysis and interactive computing. *Prerequisite: MATH 21 or ICP 1 (or equivalent)*.

MATH 90X: Freshman Seminar [1]

Examination of a topic in mathematics.

MATH 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

MATH 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

MATH 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

MATH 121: Applied Mathematical Methods I: Fourier Analysis and Boundary Value Problems[4]

Introduction to Fourier series. Physical derivation of canonical partial differential equations of mathematical physics (heat, wave and Laplace's equation). Separation of variables, Fourier series, Fourier integrals and general eigenfunction expansions. Prerequisites: MATH 23, MATH 24. Replaces MATH 126.

MATH 122: Applied Mathematical Methods II: Complex Variables and Applications [4]

Introduction to complex variables, contour integration and theory of residues. Solving partial differential equations by Fourier and Laplace transform methods. Introduction to the theory of distributions and Green's functions. *Prerequisites: MATH 121. Replaces MATH 127.*

MATH 133: Numerical Methods [3]

Numerical methods for computational mathematics. Round-off error, truncation error, numerical linear algebra, approximation and interpolation, numerical quadrature and the solution of ordinary differential equations. *Prerequisite: MATH 23 or MATH 25*

MATH 140: Mathematical Methods for Optimization [3]

Linear programming and a selection of topics from among the following: matrix games, integer programming, semidefinite programming, nonlinear programming, convex analysis and geometry, polyhedral geometry, the calculus of variations and control theory. *Prerequisite: MATH 23 or MATH 25*

MATH 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

MATH 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

MATH 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

PHILOSOPHY

Lower Division Courses

PHIL 1: Introduction to Philosophy [4]

An introduction to the main areas of philosophy using classic and contemporary sources. Consideration of central and enduring problems in philosophy, such as skepticism about the external world, the mind-body problem and the nature of morality.

PHIL 5: Logic and Critical Reasoning [4]

Introduction to formal and informal logic. Topics include argumentation analysis, fallacies, soundness vs. validity, inductive vs. deductive reasoning, truth tables, proof techniques in statement and predicate logic, and the probability calculus.

PHIL 9: Phenomenology and Existentialism [4]

Consideration of central themes in phenomenology and existentialism and their philosophical origins in 19th century philosophy. Readings from such figures as Nietzsche, Husserl, Sartre, Freud, Merleau-Ponty and Heidegger.

PHIL 90X: Freshman Seminar [1] Examination of a topic in philosophy.

PHIL 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

PHIL 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

PHIL 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

PHIL 103: Philosophy of the Mind [4]

Selected topics in the philosophy of mind, including the relation between mind and body, the self, personal identity, consciousness, the unconscious, materialism, functionalism, behaviorism, determinism and free will, and nature of psychological knowledge. *Prerequisite: One course in philosophy or consent of instructor.*

PHIL 110: Philosophy of Cognitive Science [4]

Consideration of philosophical and foundational issues in cognitive science, including the Turing Test, the Chinese Room argument, the nature of cognitive architecture animal cognition, connectionism vs. symbolic artificial intelligence, and the possibility of thinking machines.

Prerequisites: PHIL 1, COGS 1 or consent of instructor. Cross-listed with COGS 110.

PHIL 111: Philosophy of Neuroscience [4]

Questions at the intersection of philosophy and neuroscience. Relevance of recent research in neuroscience to epistemology and metaphysics. Specific topics include the mind-body problem, free will, consciousness, religion and the nature of the self. *Prerequisites: One course in philosophy or consent of instructor.*

PHIL 150: Topics in Phenomenology [4]

Study of the foundations of phenomenology in Husserl and its background in Bolzano, Frege, Brentano, Meinong, Kant and Descartes. Topics include phenomenological method, theory of intentionality, meaning, perception, evidence, ego, other minds, intersubjectivity and the life-world, as well as application of phenomenological methods to themes in natural science, social science, art and literature. Prerequisite: One course in philosophy or consent of instructor. May be repeated twice for credit with different topics.

PHIL 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

PHIL 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

PHIL 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

PHYSICS

Lower Division Courses

PHYS 5: Energy and the Environment [3]

This is an introductory course on energy and the environment. It examines different types of renewable and nonrenewable energy sources and the environmental effects of using these energy resources. The course will cover environmental, economic and sustainability considerations associated with fossil fuels and alternative energy sources.

PHYS 8: Introductory Physics I [4]

Introduction to classical and contemporary physics. Intended for students with preparation in calculus and algebra. Introduction to forces, kinetics, equilibria, fluids, waves and heat. Experiments and computer exercises integrated into course content. *Prerequisite: MATH 22 or equivalent.*

PHYS 9: Introductory Physics II [4]

Continuation of introduction to classical and contemporary physics. Introduction to electricity, magnetism, electromagnetic waves, optics and modern physics. Experiments and computer exercises integrated into course content. *Prerequisite: PHYS 8.*

PHYS 10: Physics of the Cosmos [4]

Introduction to physics and astronomy for non-science and engineering majors. The scientific method, brief history of science and astronomy, matter and energy in the universe, the solar system, stars and the Milky Way, cosmology.

PHYS 12: Light, Color, and Vision [4]

Introduction to the physics, chemistry and biology of light and vision for nonscientists. Covers basic optics, optical instruments, photography, light and color in nature, human and animal vision, visual perception and optical illusions, and aspects of modern technology including fiber optics and lasers. Includes classroom demonstrations and out-of-class observational exercises.

PHYS 50: Contemporary Physics [4]

An introduction to developments in modern physics over the last 150 years that have radically altered our view of nature. Particular emphasis is placed on relativity and quantum theory, with applications to atoms, molecules, solids, and light. Additional current research topics may include quantum control, quantum computation, and Bose-Einstein condensates. *Prerequisite: PHYS 9.*

PHYS 90X: Freshman Seminar [1]

Examination of a topic in physics.

PHYS 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

PHYS 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

PHYS 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

PHYS 105: Analytic Mechanics [3]

Newtonian mechanics; motion of particles in one, two and three dimensions; central force motion; moving coordinate systems; mechanics of continuous media; oscillations; normal modes; Lagrange's equations; Hamiltonian method; and rigid body dynamics. *Prerequisites: MATH 25 [may be taken concurrently], PHYS 9 or equivalent*

PHYS 108: Modern Optics [3]

Geometrical optics, radiative transfer, partial coherence, lasers, quantum optics. *Prerequisite: PHYS 111.*

PHYS 110: Electromagnetics I [3]

Charges and currents; electric and magnetic fields; dielectric, conducting and magnetic media; special relativity; Maxwell's equations. *Prerequisites: MATH 25 [may be taken concurrently]*, *PHYS 9 or equivalent*.

PHYS 111: Electromagnetics II [3]

Wave propagation in media, radiation and scattering; Fourier optics; interference and diffraction; ray optics and applications. *Prerequisite: PHYS 110.*

PHYS 112: Introduction to Statistical and Thermal Physics [3]

Basic concepts of statistical mechanics, microscopic basis of thermodynamics and applications to macroscopic systems, condensed states, phase transformations, quantum distributions, elementary kinetic theory of transport processes, fluctuation phenomena. *Prerequisites: MATH 25 [may be taken concurrently], PHYS 9 or equivalent.*

PHYS 120: Physics of Materials [4]

Electrical, optical and magnetic properties of solids. Free electron model, introduction to band theory. Crystal structures and lattice vibrations. Mechanisms and characterization of electrical conductivity, optical absorption, magnetic behavior, dielectric properties and p-n junctions. *Prerequisites: PHYS 9, CHEM 112.*

PHYS 129: Particle Physics [3]

Tools of particle and nuclear physics. Properties, classification and interaction of particles including the quark-gluon constituents of hadrons. High-energy phenomena analyzed by quantum mechanical methods. Quantum number determination of resonances, hadron structure functions, introductory electro-weak theory with Dirac matrices, Standard Model (overview), grand unified theories. *Prerequisite: PHYS 136*.

PHYS 136: Quantum Mechanics I [3]

Introduction to the methods of quantum mechanics. Schrödinger's equation, Heisenberg uncertainty principle, quantum numbers, harmonic oscillator. *Prerequisites: PHYS 105, PHYS 110, PHYS 111 [may be taken concurrently].*

PHYS 137: Quantum Mechanics II [3]

The hydrogen atom, scattering and applications to atomic physics, molecular physics, condensed matter physics, nuclear physics and elementary particle physics. *Prerequisite: PHYS 136.*

PHYS 138: Modern Atomic Physics [3]

The description and calculation of the properties of atomic energy levels based on the central field approximation. Modern experimental methods in atomic physics and some of the important physics obtained from them. Examples include magnetic resonance, lasers and masers, ion and neutral atom traps, optical pumping and beam foil spectroscopy. *Prerequisite: PHYS 137*.

PHYS 141: Condensed Matter Physics [3]

Classification of solids and their bonding; electromagnetic, elastic and particle waves in periodic lattices; thermal, magnetic and dielectric properties of solids; energy bands of metals and semiconductors; superconductivity; magnetism; ferroelectricity; magnetic resonances. *Prerequisite: PHYS 137*.

PHYS 150: Energy Sources [3]

Fossil energy resources, nuclear energy, solar energy and other renewable energy sources (wind, hydro, geothermal.) Prerequisite: ICP 1 (or equivalent).

PHYS 151: Solar Energy [3]

The solar energy resource, modeling and simulation, thermal collectors, photovoltaics, solar energy systems, special applications (solar lasers, material processing). *Prerequisite: ICP 1 (or equivalent)*.

PHYS 160: Modern Physics Lab [4]

Provides a rigorous foundation in physics laboratory techniques, with an emphasis on hands-on laboratory training. The nature of the experiments available to students will cover a range of modern topics, from nonlinear dynamics and chaos through nonlinear optics and spectroscopy. Emphasis is placed on error estimation, data analysis, and interpretation. *Prerequisite: PHYS 50.*

PHYS 161: Astrophysics and Cosmology [3]

Elements of general relativity. Physics of pulsars, cosmic rays, black holes. The cosmological distance scale, elementary cosmological models, properties of galaxies and quasars. The mass density and age of the universe. Evidence for dark matter and concepts of the early universe and of galaxy formation. Reflections on astrophysics as a probe of the extrema of physics. *Prerequisites: MATH 22 and PHYS 9 or equivalent.*

PHYS 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

PHYS 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

PHYS 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

POLITICAL SCIENCE

Lower Division Courses

POLI 1: Introduction to Political Science [4]

A general introduction to the American political system (the Constitution, political culture, parties, elections, and the executive, legislative and judicial branches) and to comparative politics (application of political analysis to a variety of international political systems).

POLI 90X: Freshman Seminar [1]

Examination of a topic in political science.

POLI 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

POLI 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

POLI 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

POLI 100: Political Process and Institutions [4]

The political and government context of policy, from the agenda setting to evaluations. Examines constitutional, federal and local context of policy, the process by which government institutions make decision (and the interaction among institutions), and approaches for understanding and anticipating policy decision making. Required of all Public Policy students. Prerequisite: POLI 1.

POLI 190: Topics in Political Science [4]

Intensive treatment of a special topic or problem in political science. May be repeated for credit. *Prerequisite: junior or senior standing in SCS major or consent of instructor.*

POLI 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

POLI 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

POLI 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

PSYCHOLOGY

Lower Division Courses

PSY 1: Introduction to Psychology [4]

Introduction to psychology as a science of behavior, including history, research methods, biological bases of behavior, cognition, personality, social behavior, psychological disorders, techniques of therapy and applied science.

PSY 10: Analysis of Psychological Data [4]

Design and analysis of psychological research including experimental design, correlational research, and descriptive and inferential statistics. Students in the psychology emphasis must take this course before taking any upper division psychology courses. *Prerequisite: PSY 1*.

PSY 90X: Freshman Seminar [1]

Examination of a topic in psychology.

PSY 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

PSY 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

PSY 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

PSY 105: Research Methods in Psychology [4]

Survey of common methodological approaches in psychological research. *Prerequisite: PSY 10.*

PSY 110: History of Psychology. [4]

Development of the scientific study of human and animal behavior, both in specific subject areas and in general. *Prerequisite: PSY 1*.

PSY 120: Physiological Psychology [4]

Relationship of brain structure and function to behavior, motivation, emotion, language and learning in humans and other animals. Review of research methods used in physiological psychology and neuroscience. *Prerequisite: PSY 1*.

PSY 121: Cognitive Psychology [4]

Introduction to human information processing, mental representation and transformation, imagery, attention, memory, language processing, concept formation, problem solving and computer simulation. *Prerequisite: PSY 1.*

PSY 130: Developmental Psychology [4]

Ontogenetic account of human behavior from conception through adolescence with focus on motor skills, mental abilities, motivation and social interaction.

Prerequisite: PSY 1.

PSY 131: Social Psychology [4]

Behavior of the individual in social situations, surveying problems of social cognition, social interaction, group tensions, norm development, attitudes, values, public opinion, status. *Prerequisite: PSY 1.*

PSY 132: Personality [4]

Theories of Freud, Erikson and other major contemporary approaches to personality. *Prerequisite: PSY 1.*

PSY 133: Abnormal Psychology [4]

Descriptive and functional account of behavioral disorders, with primary consideration given to neurotic and psychotic behavior. *Prerequisite: PSY 1.*

PSY 140: Clinical Psychology [4]

Major theoretical approaches to clinical psychology, including psychoanalysis, existentialism, humanism, systems theory and behavioral approaches. A review of what clinical psychologists do, including assessment methods, professional roles, and approaches to treatment. *Prerequisite: PSY 1.*

PSY 141: Industrial and Organizational Psychology [4]

Survey of interrelationships among psychological processes, interpersonal dynamics, and organizational forms. Topics include motivation, communication, decision making, leadership, personnel selection and training, stress and conflict, career development, organizational development and organization-community relations. *Prerequisite: PSY 1.*

PSY 145: Human Sexuality [4]

Survey of existing knowledge of human sexual behavior; physiological, anatomical, psychological and cultural components; normative sexual functioning. Such topics as sexual deviation, sexual dysfunctions and types of treatment are also considered. *Prerequisite: PSY 1*.

PSY 146: Alcohol, Drugs and Behavior [4]

Survey of major drugs of abuse, their mode of action and their behavioral effects, both acute and chronic; etiology and maintenance of drug abuse; review of prominent strategies for prevention, intervention and treatment. *Prerequisite: PSY 1.*

PSY 150: Psychological Perspectives on Cultural, Racial and Ethnic Diversity [4]

Issues that bear upon race, ethnicity and culture, such as the cultural specificity of psychological theories, cultural influences on child development, ethnic identity, psychological issues in immigration, ethnic and racial prejudice, and assessment and interventions with culturally diverse and ethnic minority populations. *Prerequisite: PSY 1*.

PSY 190: Topics in Psychology [4]

Intensive treatment of a special topic or problem of psychological interest. May be repeated for credit in different subject area. Prerequisites: PSY 1; junior or senior standing; major in SCS in the psychology emphasis or consent of instructor.

PSY 191: Fieldwork in Psychology [1-3]

Supervised experience off and on campus, in community and institutional settings. Prerequisites: PSY 1; junior or senior standing; major in SCS in the psychology emphasis or consent of instructor.

PSY 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

PSY 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

PSY 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

PUBLIC POLICY

Lower Division Courses

PUBP 1: Introduction to Public Policy [4]

Interdisciplinary introduction to public policy and policy issues facing the American voter. Emphasis is on how difficult it is to arrive at an informed decision--not on determining what that decision ought to be. Examines a diverse set of policy topics, including environment, health, education and social policy, among others. *Required of all Public Policy students*.

Upper Division Courses

PUBP 100: Political Process and Institutions [4]

The political and governmental context of policy, from the agenda setting to evaluations. Examines constitutional, federal and local context of policy, the process by which governmental institutions make decisions (and the interaction among institutions), and approaches for understanding and anticipating policy decision-making. *Prerequisites: POLI 1.* Required of all Policy students.

PUBP 110: Poverty and Social Policy [4]

Overview of poverty and social policy in the United States in a historical context from the nineteen century until the present. Discussion of current policy issues and policy debates surrounding poverty and inequality. *Prerequisites: PUBP 1, PUBP 100, ECON 100 and PSY 105 or ECON 130.*

PUBP 120: Health Care Policy [4]

Examines current health policy issues and policy approaches, as a way of exploring problems in the design and implementation of policy. Concentration on issues of access to care, quality of care, health care costs, health insurance, health behavior and the cultural and linguistic issues facing immigrants' access to care. *Prerequisites: PUBP 1, PUBP 100, ECON 100 and PSY 105 or ECON 130.*

PUBP 130: Environmental Policy [4]

Examines current environmental policy as a way of exploring problems in the design and implementation of policy. Provides an overview of basic concepts and methods of environmental policy analysis and implementation, looking at a range of local and global environmental policy issues, such as environmental justice, air quality and urbanization. Prerequisites: PUBP 1, PUBP 100, ECON 100 and PSY 105 or ECON 130.

PUBP 140: Immigration and Public Policy [4]

Examines the origins, consequences and characteristics of immigrants to the United States, from the nineteenth century to the present. Social and economic forces behind immigration, the impact of immigrants and their process of integration. Various debates on immigrant and immigration policy. *Prerequisites: PUBP 1, PUBP 100, ECON 100 and PSY 105 or ECON 130.*

PUBP 150: Race, Ethnicity and Public Policy [4]

Examines the ways in which policies are shaped by and respond to issues of race, ethnicity and culture. Among others, issues of inequality in the labor market, segregation, discrimination, environmental justice, health care access and social and political inequality. *Prerequisites: PUBP 1, PUBP 100, ECON 100 and PSY 105 or ECON 130.*

PUBP 196: Individual Internship [1-4]

Internship in the public policy field. For example, a 10-week internship, usually completed during the summer between junior and senior year at a governmental or non-profit organization, a research center or UC Centers in Sacramento or Washington, D.C.. Public Policy majors are required to write an original research paper based on the internship. Prerequisites: PUBP 100, ECON 100 and PSY 105 or ECON 130, or permission from instructor. Course may be repeated twice.

PUBP 199: Directed Independent Study in Public Policy [4]

Capstone course taken in the senior year. Summer internship and/or and independent research project. Under the supervision of a faculty member, students in the internship program or the independent studies program are required to write an original policy research paper.

Prerequisites: PUBP 1, PUBP 100, ECON 100 and PSY 105 or ECON 130.

QUANTITATIVE AND SYSTEMS BIOLOGY

Graduate Courses

QSB 212: Advanced Signal Transduction and Growth Control [4]

Signal transduction in mammalian cells with emphasis on molecular and genetic regulation of these processes and their role in cell function. Graduate requirement includes an advanced discussion section involving research methodology and data interpretation led by the instructor. Prerequisites: BIS 100, BIS 110 or equivalent, or consent of instructor.

QSB 241: Advanced Genomic Biology [4]

Comprehensive introduction to the language of genes and genomes, including genotype to phenotype relationships, gene regulation of development and disease, sources of phenotypic variation and organization of genomes across the domains of life. Graduate requirements include advanced discussion section led by instructor and genome informatics project. *Prerequisites: Graduate standing and consent of instructor.*

QSB 280: Advanced Mathematical Biology [3]

Graduate level mathematical modeling and data analysis skills for life science researchers taught through hands-on computational laboratories. Topics include population models, predator-prey and competition systems, epidemic models with applications to sexually transmitted diseases, dynamic diseases, enzyme kinetics, biological oscillators and switches. Prerequisite: Approval of graduate committee.

QSB 281: Advanced Computational Biology [4]

Introduction to the principles and application of computational simulations and modeling in biology, ranging from bioinformatics to computational cell biology. Genome sequence analysis and annotation, phylogenic analysis, protein structure prediction, molecular modeling, docking and simulations of metabolic and regulatory networks. Graduate requirements include advanced discussion section led by instructor and computational biology project. *Prerequisites: Graduate standing and consent of instructor.*

QSB 290: Current Topics in Quantitative and Systems Biology [3]

Discussion, reading and study that expose students to current research directions in the field; student-led presentation, analysis and discussion of reading assignments from the scientific literature. *Prerequisite: Graduate standing.* S/U grading only.

QSB 291: Seminar [1]

Seminar series covering various topics in quantitative and systems biology presented by QSB Graduate Group faculty and visiting speakers. *Prerequisites: Approval of graduate committee.*

QSB 292: Group Meeting [1]

Meetings to describe current progress and research plans lead by individual QSBGG faculty. *Prerequisites: Approval of graduate committee.*

QSB 293: Journal Club [1]

Student-led presentation, analysis, and discussion of reading assignments from the scientific literature. *Prerequisite: QSB 290.*

QSB 294: Responsible Conduct of Research [1]

Seminar covering responsibilities and expectations for researchers as well as advice for success in graduate school and science careers, required for NIH-funded graduate students.

QSB 295: Graduate Research [1-12]

Supervised research. *Prerequisites:* Graduate standing and consent of instructor.

QSB 298: Directed Group Study [1-6]

Group project under faculty supervision. *Prerequisites: Graduate standing and consent of instructor.* S/U grading only.

QSB 299: Directed Independent Study [1-6]

Independent project under faculty supervision. *Prerequisites: Graduate standing and consent of instructor.* S/U grading only.

SOCIAL AND COGNITIVE SCIENCE

Lower Division Courses

SCS 90X: Freshman Seminar [1]

Examination of a topic in the social, behavioral, and cognitive sciences.

SCS 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

SCS 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

SCS 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

SCS 140: Psychology and Economics [4]

A review of psychological and economic research on departures from perfect rationality, self-interest and other classical assumptions of economics. The implications of these new findings for classical economics will be explored. *Prerequisites: PSY 1, ECON 1.*

SCS 145: Second Language Learning and Bilingualism [4]

Issues in second language acquisition, including processing of linguistic information by bilinguals (perception, recall, translation), structure of bilingual discourse, child bilingualism, language maintenance or shift, with particular focus on the North American context. *Prerequisite: PSY 1*.

SCS 192: Integrative Topics [4]

Special topics that integrate theory or research from more than one discipline in the social and behavioral sciences. Prerequisites: PSY 1, ECON 1, SOC 1 or POLI 1; permission of the instructor. May be repeated for credit with a different topic.

SCS 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

SCS 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

SCS 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

SOCIOLOGY

Lower Division Courses

SOC 1: Introduction to Sociology [4]

The study of groups, culture, collective behavior, classes and caste, community and ecology, role, status and personality.

SOC 90X: Freshman Seminar [1]

Examination of a topic in sociology.

SOC 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

SOC 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

SOC 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

SOC 190: Topics in Sociology [4]

Intensive treatment of a special topic or problem in sociology. May be repeated for credit in different subject area.

Prerequisites: SOC 1; junior or senior

standing; major in SBCS or consent of instructor.

SOC 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

SOC 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

SOC 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

SPANISH

Lower Division Courses

SPAN 1: Elementary Spanish I [4]

Introduction to speaking, reading, writing and understanding Spanish. Classes conducted in Spanish.

SPAN 2: Elementary Spanish II [4]

Introduction to speaking, reading, writing and understanding Spanish. Classes conducted in Spanish. *Prerequisite: SPAN 1 or appropriate score on Spanish placement exam.*

SPAN 3: Intermediate Spanish I [4]

Review of Spanish grammar with emphasis on building speaking and writing skills and on readings to build cultural understanding. Classes conducted in Spanish.

Prerequisite: SPAN 2 or appropriate score on Spanish placement exam.

SPAN 4: Intermediate Spanish II [4]

Review of Spanish grammar with emphasis on building speaking and writing skills and on readings to build cultural understanding. Classes conducted in Spanish.

Prerequisite: SPAN 3 or appropriate score on Spanish placement exam.

SPAN 10: Spanish for Heritage Speakers II [4]

This course is for native speakers with limited experience in grammar and composition. Emphasis on formal language study and writing. Classes and discussion conducted in Spanish. *Prerequisites: Native Speaker proficiency; appropriate score on Spanish placement test.*

SPAN 11: Spanish for Heritage Speakers II [4]

This course is for native speakers with limited experience in grammar and composition. Emphasis on formal language study and writing. Classes and discussion conducted in Spanish. *Prerequisites: SPAN 10 or appropriate score on Spanish placement test.*

SPAN 90X: Freshman Seminar [1]

Examination of a topic in Spanish.

SPAN 95: Lower Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

SPAN 98: Lower Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

SPAN 99: Lower Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

Upper Division Courses

SPAN 100: Hispanic Cultures I [4]

The study of the cultures of the Hispanic world from an interdisciplinary perspective. It covers the period ending in the nineteenth century. This course will emphasize conversation and composition.

Prerequisites: SPAN 4 or equivalent or appropriate score on Spanish placement exam.

SPAN 101: Hispanic Cultures II [4]

The study of Hispanic cultural manifestations from an interdisciplinary perspective. It covers from the nineteenth century to the present. This course will emphasize conversation and composition. Prerequisites: SPAN 100 or equivalent or appropriate score on Spanish placement

SPAN 195: Upper Division Undergraduate Research [1-5]

Supervised research. *Permission of instructor required.*

SPAN 198: Upper Division Directed Group Study [1-5]

Permission of instructor required. P/NP grading only.

SPAN 199: Upper Division Individual Study [1-5]

Permission of instructor required. P/NP grading only.

WORLD CULTURES AND HISTORY

Upper Division Courses

WCH 100: Topics in Area Studies [4] In-depth study of the history and cultural, political and economic systems of a region. Prerequisites: Completion of lower division requirements for either World Cultures and History or Social, Behavioral and Cognitive Sciences, or permission of instructor. May be repeated for credit up to three times with different topics.

WCH 190: World Cultures and History Proseminar: Research [3]

Capstone course for majors. Students conduct research under faculty supervision to culminate in a senior thesis. Required of all World Cultures and History majors. *Prerequisite: senior standing in WCH major.*

WCH 191: World Cultures and History Proseminar: Senior Thesis [3]

Capstone course for majors. Completion of a senior thesis; extensive writing required. Required of all World Cultures and History majors. *Prerequisites: WCH 190 and senior standing in WCH major.*

WCH 192: Public Research Project in World Cultures and History [1-3]

Directed individual or group project designed around need of an external agency for research and public communication on an issue of vital public interest. End product may be in the form of a written report, interpretive text for the public, website, et al. Extensive writing will be required. Required of all World Cultures and History majors. Students may petition to complete this requirement through alternative activities, subject to review and approval by the dean.

WCH 198: Upper Division Directed Group Study [2-4]

Directed group study and research under the direction of WCH faculty. Open to students who have completed at least 12 upper division units in WCH. Prerequisites: Permission of instructor and school required. May be repeated with different topics up to three times.

WCH 199: Upper Division Individual Study [1-4]

Directed individual study and research, under the direction of WCH faculty, in area not normally covered in the WCH curriculum. Open to students who have completed at least 12 upper division units in WCH. Permission of instructor and School required.

WRITING

Lower Division Courses

WRI 1: Academic Writing [4]

Development of critical reading, thinking and academic writing ability. Intensive practice in analysis of college-level texts and in expository writing and revision. Section placement based on the student's UC Entry Level Writing Requirement Exam score. Completion with a grade of C or better meets University of California Entry Level Writing Requirement. *Prerequisite:* Not open to students who have scored 8 or higher on the University of California Entry Level Writing Requirement Examination.

WRI 10: College Reading and Composition [4]

Development of college-level skills in effective use of language, analysis and argumentation, organization and strategies for creation, revision and editing. *Prerequisite: Satisfaction of the University of California Entry Level Writing Requirement Examination.*

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FOUNDING FACULTY

Faculty recruitment is well under way at UC Merced, where many of the world's outstanding scholars are already hard at work laving an academic foundation of excellence. By opening day, UC Merced will have 60 of these highly respected educators and cutting-edge researchers on board. As members of the founding faculty, these professors are charged with responsibilities that extend beyond teaching and research to include recruitment of additional faculty members and planning of academic programs. The following list includes founding faculty members whose appointments were finalized prior to the publication of this catalog.

KEITH E. ALLEY,

Vice Chancellor of Research/Dean of Graduate Studies and Professor, School of Natural Sciences

B.S., D.D.S., M.S., Ph.D., University of Illinois

Developmental neuroscience focusing on cellular mechanisms that assure scaling of neuronal populations with the targets they innervate, neuromuscular maturation and plasticity

DAVID B. ASHLEY,

Executive Vice Chancellor/Provost, Professor and holder of the Shaffer-George Chair in Engineering

B.S., M.S., Massachusetts Institute of Technology; M.S., Ph.D., Stanford University

Development and implementation of risk analysis techniques appropriate for project management and construction-engineering decisions. Determination of factors leading to construction project success, predictive models of project performance, assessment of project change consequential effects, project scope modeling and definition, conceptual estimating, innovative project financing approaches

ROGER C. BALES.

Professor, School of Engineering B.S., Purdue University; M.S., University of California, Berkeley; M.S., Ph.D., California Institute of Technology Hydrology, snow and ice, hydrochemistry, climate impacts on water resources, cli-

MIRIAM BARLOW,

Assistant Professor, School of Natural Sciences

mate changes over polar ice sheets

B.S., University of Utah; M.S., Ph.D., University of Rochester

Evolution of bacteria, predicting the evolution of antibiotic resistance, testing evolutionary theory

JINAH CHOI,

Assistant Professor, School of Natural Sciences

B.S., University of California, Los Angeles; Ph.D., University of Southern California Hepatitis C virus (HCV) and the mechanism of synthesis and functions of novel HCV proteins that are produced by programmed translational frameshifting, as well as how HCV replication might be regulated by endogenous and exogenous agents including ribavirin, cytokines, alcohol and receive oxygen species

MICHELLE M. CHOUINARD,

Assistant Professor, School of Social Sciences, Humanities and Arts
B.A., University of California, Berkeley;
M.A., Ph.D., Stanford University
Mechanisms of conceptual change in the context of conversational interaction, the role of children's questions in conceptual development, development of biological knowledge, language acquisition, the roles of positive and negative evidence in language acquisition, word learning and label extension in language acquisition.

MICHAEL E. COLVIN,

Professor, School of Natural Sciences S.B. (2), Massachusetts Institute of Technology;

Ph.D., University of California, Berkeley Computational and systems biology, biotechnology, computational chemistry

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HENRY JAY FORMAN,

Professor, School of Natural Sciences B.A., Queens College; Ph.D., Columbia University Signal transduction, antioxidants and

redox signaling, lung disease

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American literature, American nature writing and literature of the environment, California literature and culture, literature of the Central Valley, literature and culture of the Great Depression, literature and photography

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Community ecology, scaling and spatial phenomena in ecology, theoretical ecology, conservation biology, microbial diversity

KENJI HAKUTA,

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THOMAS C. HARMON,

Associate Professor, School of Engineering B.S., John Hopkins University; M.S., Ph.D., Stanford University Contaminant transport in aquatic systems, soil and groundwater remediation, development and use of environmental sensors

EVAN HEIT,

Professor, School of Social Sciences, Humanities and Arts B.S.E., B.A., University of Pennsylvania; Ph.D., Stanford University Categorization, inductive reasoning, recognition memory, computer simulation and mathematical modeling, intuitive statistical judgment.

GREGG HERKEN,

Professor, School of Social Sciences, Humanities and Arts B.A., University of California, Santa Cruz; Ph.D., Princeton University History, American diplomatic history, nuclear history, history of Cold War

SHAWN E. KANTOR.

Professor, School of Social Sciences, Humanities and Arts B.A., University of Rochester; M.S., Ph.D., California Institute of Technology Political economy, law and economics, U.S. economic history, economic development, public economics

ANNE MYERS KELLEY,

Professor, School of Natural Sciences B.S., University of California, Riverside; Ph.D., University of California, Berkeley Resonance Raman spectroscopy and microscopy, molecular photochemistry and photophysics, organic materials for nonlinear optics, modeling of spectroscopic data

DAVID F. KELLEY,

Professor, School of Natural Sciences B.S., Whitworth College; Ph.D., University of Washington

Spectroscopy and dynamics of semiconductor nanoparticles, ultrafast spectroscopy of excited states and reactive intermediates, solvation effects on proton and electron transfer reactions, vibrational dynamics of gas phase molecules

ARNOLD D. KIM,

Assistant Professor, School of Natural Sciences

B.S., Northwestern University; M.S., Ph.D., University of Washington Wave propagation in random media, light propagation in tissues, wireless communi-

Wave propagation in random media, light propagation in tissues, wireless communications, scientific computing, asymptotic and perturbation methods

VALERIE J. LEPPERT,

Assistant Professor, School of Engineering B.A. (2), California State University, Sonoma; Ph.D., Northwestern University Electron microscopy, nanomaterials for application in technology and the environment

SEAN MALLOY,

Assistant Professor, School of Social Sciences, Humanities, and Arts
B.A., University of California, Berkeley;
M.A., Ph.D., Stanford University
The study of war and morality, American political history, utopian and extremist movements in the 1930s, the domestic sources of U.S. foreign policy, and the ways in which economics, religion and culture shape Americans' interactions with the rest of the world

JENNIFER MANILAY,

Assistant Professor, School of Natural Sciences

B.A., University of California, Berkeley; Ph.D., Harvard University Mechanisms that control cell fate decisions in the immune system, the development of T lymphocytes, important components of immune defense against pathogens

MANUEL M. MARTIN-RODRIGUEZ,

Professor, School of Social Sciences, Humanities and Arts
Licenciatura, Universidad de Sevilla (Spain), M.A., University of Houston, Ph.D.,
University of California, Santa Barbara
Cross-disciplinary perspectives from cultural, ethnic and film studies, including identity formation, globalization and transnationalism, border studies, textual recovery, intra-cultural difference, the Hispanic context of Chicano/Chicana literature, popular culture and the mass media

TEENIE MATLOCK,

Assistant Professor, School of Social Sciences, Humanities and Arts B.A., M.A., California State University, Fresno; Ph.D., University of California, Santa Cruz

Cognitive science, psycholinguistics, spatial cognition, metaphor, semantics, gesture

MONICA MEDINA.

Assistant Professor, School of Natural Sciences

B.S., Universidad de Los Andes, Bogota, Columbia; Ph.D., University of Miami Phylogenetics and organelle genome evolution of marine invertebrate animals, genomics of coral-zooxanthellae symbioses in Caribbean reefs

MATTHEW MEYER,

Assistant Professor, School of Natural Sciences

B.S., University of Kansas, M.S., University of Wisconsin, Ph.D., Texas A&M University Research on using temperature-dependent isotope effects as a probe for enzyme dynamics in soybean lipoxygenase-1

KEVIN A. MITCHELL,

Assistant Professor, School of Natural Sciences

B.S., Carnegie Mellon University; M.A., Ph.D., University of California, Berkeley Nonlinear dynamics and classical/quantum chaos with applications to atomic and molecular physics; semi-classical phase-space techniques; topological and geometric methods for low-dimensional systems; the geometric/Berry phase and gauge theory

RUTH MOSTERN,

Assistant Professor, School of Social Sciences, Humanities and Arts B.S., Georgetown University, M.A., Ph.D., University of California, Berkeley Geography and state power in Middle Period China; georeferencing and digital mapping of historical and cultural phenomena

SHAWN D. NEWSAM,

Assistant Professor, School of Engineering B.S., University of California, Berkeley; M.S., University of California, Davis; Ph.D., University of California, Santa Barbara Image processing, computer vision, pattern recognition, machine learning, content-based information retrieval, digital libraries, data mining, knowledge discovery in spatio-temporal, multi-media, and scientific datasets.

ROBERT S. OCHSNER,

Director of Writing and Lecturer, UC Merced Writing Program B.A., Western Washington University; M.A., Ph.D., University of California, Los Angeles

Social and cultural issues of teaching "white" English, a research focus that joins ESL theory with social constructionist insights about the power relationships between teacher and student or among diverse students in groups

PEGGY A. O'DAY,

Associate Professor, School of Natural Sciences

B.S., University of California, Davis; M.S., Cornell University; Ph.D., Stanford University

Aqueous, surface and environmental geochemistry; biogeochemistry and transport of inorganic contaminants in natural systems; geochemical applications of spectroscopy and microscopy; chemistry in hydrothermal systems

DAVID M. OJCIUS,

Professor, School of Natural Sciences B.A., Ph.D., University of California, Berkeley

Infection by intracellular pathogens, particularly Chlamydia trachomatis; interaction between infected cells and the immune system; mechanisms of cell death; innate immunity

RUDY MARTIN ORTIZ,

Assistant Professor, School of Natural Sciences

B.A., M.Sc., Texas A & M University; Ph.D., University of California, Santa Cruz Endocrine physiology; physiological adaptations in water and electrolyte homeostasis and fat metabolism during extreme conditions such as prolonged fasting and altered gravitational load

MARIA G. PALLAVICINI,

Dean, School of Natural Sciences, and Professor, School of Natural Sciences B.S., University of California, Berkeley; Ph.D., University of Utah Stem cell biology; genomic and proteomic abnormalities in cancer, particularly leukemia and breast cancer; relationships between genetic damage induced by chemical exposure and cancer development

DUNYA RAMICOVA,

Professor, School of Social Sciences, Humanities and Arts

B.F.A., Goodman School of Drama, M.F.A., Yale University School of Drama Costume design for theatre, opera, ballet, dance, film and television; history of costume design; history of clothing and fashion; drawing; watercolor painting

BELINDA I. REYES,

Assistant Professor, School of Social Sciences, Humanities and Arts B.S., University of Illinois, Urbana-Champaign; Ph.D., University of California, Berkeley

Demography, immigration, immigration policy, immigrant adaptation, race and ethnicity, urban economics, and social and economic progress of race/ethnic minorities

CRISTIÁN H. RICCI,

Assistant Professor, School of Social Sciences, Humanities and Arts
B.A., California State University, Los
Angeles; M.A., Ph.D., University of
California, Santa Barbara
19th-and 20th-century Spanish literature,
19th-and 20th-century Spanish-American
literature, Portuguese literature, Golden
Age and Colonial literature.

WILLIAM R. SHADISH,

Professor, School of Social Sciences, Humanities and Arts B.A., Santa Clara University; M.S., Ph.D., Purdue University Clinical psychology, experimental and quasiexperimental design, meta-analysis, pro-

gram evaluation, psychology of science

MAYYA TOKMAN,

Assistant Professor, School of Natural Sciences

B.S., University of California, Los Angeles; Ph.D., California Institute of Technology Numerical methods, scientific computing

CAROL TOMLINSON-KEASEY,

Chancellor and Professor, School of Social Sciences, Humanities and Arts B.A., Pennsylvania State University; M.S., Iowa State University; Ph.D., University of California, Berkeley Developmental psychology, development of cognitive potential

SAMUEL J. TRAINA,

Director, Sierra Nevada Research Institute, and Professor, School of Natural Sciences B.S., Ph.D., University of California, Berkeley

Surface, colloidal and complexation chemistry in soils, sediments and natural waters; remediation of contaminated soils and sediments

CHRISTOPHER VINEY,

Professor, School of Engineering B.A., Ph.D., Cambridge University Biomolecular materials (design of materials synthesis, assembly, processing and physical optimization strategies based on examples from nature), physical science and engineering of polymers and liquid crystals (structure-property-processing relationships)

KATIE L. WINDER,

Assistant Professor, School of Social Sciences, Humanities, and Arts B.A., Lewis and Clark College; Ph.D., John Hopkins University

Applied microeconomics, labor economics, economics of gender and discrimination, economics of welfare and poverty

ROLAND WINSTON.

Professor, Schools of Engineering and Natural Sciences B.S., M.S., Ph.D., University of Chicago

B.S., M.S., Ph.D., University of Chicago Solar power and renewable energy, elementary particle physics, non-imaging optics

J. ARTHUR WOODWARD,

Professor, School of Social Sciences, Humanities and Arts B.S., Wake Forest University; M.A., Ph.D., Texas Christian University Experimental design, statistical genetics, applied statistics and psychometrics

JEFF R. WRIGHT,

Dean, School of Engineering, and Professor, School of Engineering B.A., B.S.E., M.S.E., University of Washington; Ph.D., John Hopkins University

Water resources and environmental management; design and implementation of computer-based spatial decision support systems for civil infrastructure, transportation, water resources; land resources engineering and management

JEFFREY YOSHIMI,

Assistant Professor, School of Social Sciences, Humanities and Arts B.A., University of California Berkeley; M.A., Ph.D., University of California, Irvine Philosophy of mind, philosophy of cognitive science, phenomenology (especially Husserl) and neural networks

ADJUNCT PROFESSORS

PHILIP B. DUFFY.

Associate Adjunct Professor, School of Natural Sciences A.B., Harvard University; M.S., Ph.D., Stanford University Global climate change; climate modeling; detection of anthropogenic climate change; societal impacts of climate change

ALEKSANDR NOY,

Associate Adjunct Professor, School of Natural Sciences

B.A., Moscow State University, M.S., Ph.D., Harvard University Nanosynthesis and single-molecule imaging and measurements

WILLEM J.M. Van BREUGEL,

Adjunct Professor, School of Natural Sciences

Ingeniur degree, Eindhoven University; Doctoral degree, Ph.D., Leiden University Distant massive galaxies, the effects of their central super-massive black holes on the galaxy-formation process, and the formation and evolution of the largest structures known in the Universe: clusters of galaxies

ANTHONY W.H. Van BUUREN.

Associate Adjunct Professor, School of Natural Sciences

B.Sc., Simon Fraser University, M.Sc., Ph.D., University of British Columbia Synthesis and electronic structure of nanomaterials

ENDOWED CHAIRS

Endowed chairs and professorships are critical to the successful development of the University of California, Merced. Hiring the very finest scholars ensures that UC Merced will continue the University of California's tradition of excellence in teaching and research, and endowments are pivotal in attracting educators and researchers of the highest quality.

At the time of publication, UC Merced is fortunate to have received commitments for 16 chairs in disciplines ranging from the sciences to the arts.

THE ENDOWED CHAIRS AT UC MERCED

E.W. AND DOROTHY BIZZINI

Chair in Biological Sciences

COATS FAMILY

Chair in the Arts

TONY COELHO

Chair in Public Policy

COUNTY BANK

Chair in Economics

EMMETT, BERNICE AND CARLSTON CUNNINGHAM

Chair in Cognitive Development

TED AND JAN FALASCO

Chair in Earth Sciences and Geology

RENO FERRERO FAMILY

Chair in Electrical Engineering

VINCENT HILLYER

Chair in Early Literature

JOE AND MARGARET JOSEPHINE

Chair in Biological Sciences

ART AND FAFA KAMANGAR

Chair in Biological Sciences

THE MCCLATCHY COMPANY

Chair in Communications

JOHN AND LUCIA MYERS

Chair for the Sierra Nevada Research Institute

PRESIDENTIAL CHAIR

KEITH AND ELINOR SHAFFER AND BETTYLOU GEORGE

Chair in Engineering

THONDAPU FAMILY

Chair in Bioengineering

RUIZ FAMILY

Chair in Entrepreneurship

ACCREDITATION

The University of California, Merced is in the eligibility stage seeking regional accreditation by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges, 985 Atlantic Avenue, Suite 100, Alameda, CA 94501. Application for candidacy will be initiated in December 2005.

UNIVERSITY POLICY ON NONDISCRIMINATION, SEXUAL HARASSMENT, STUDENT RECORDS AND PRIVACY

Nondiscrimination: The University of California, in accordance with applicable federal and state laws and University policy, does not discriminate on the basis of race, color, national origin, religion, sex, disability, age, medical condition (cancerelated), ancestry, marital status, citizenship, sexual orientation or status as a Vietnam-era veteran or special disabled veteran. The University also prohibits sexual harassment. This nondiscrimination policy covers admission, access and treatment in University programs and activities.

Inquiries regarding the University's student-related nondiscrimination policies may be directed to Student Judicial Affairs.

Sexual Harassment: Sexual harassment of all persons who participate in University programs and activities is prohibited by law and by University regulation (Policy 380-12). Sexual harassment is unacceptable and will not be condoned on the UC Merced campus.

Disclosures from Student Records: In accordance with the Federal Family Educational Rights and Privacy Act of 1974 and campus procedures implementing the University of California Policies Applying to the Disclosure of Information from Student Records, students at the UC Merced campus of the University have the following rights:

 The right to inspect and review their own student records within 45 days of the date the University receives a written request for access.

Students should submit their requests in writing to the University registrar, dean, or other appropriate campus official for the office having custody of the requested records. The request must identify the record(s) they wish to inspect and review. The campus official will make

- arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the official receiving the request, that official shall advise the student of the correct official and redirect the request.
- The right to request the amendment of their own student records if a student believes the records are inaccurate or misleading. Students should submit a written request to amend a record that they believe is inaccurate or misleading to the campus official responsible for the record, clearly identifying the portion of the record they want changed, and specifying why it is believed to be inaccurate or misleading. If the University determines that the record should not be amended as requested by the student, the University will notify the student of the decision and advise him/her of the right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.
- The right to consent to disclosures of personally identifiable information contained in their student records, except to the extent that law and policy authorize disclosure without consent.

One exception permitting disclosure without consent is disclosure to campus officials having a legitimate educational interest in the records. A campus official is any individual designated by the campus to perform an assigned function on behalf of the campus. Legitimate educational interest means a demonstrated need to know by officials who act in a student's educational interest. A campus official has a "legitimate educational interest" in a record if the official is performing a task (1) specified in his or her job description; (2) specifically related to the official's participation in the student's education; (3) specifically related to the discipline of a student; or (4) specifically related to providing a service or benefit associated with a student or student's family, such as health care, counseling, job placement or financial aid.

Another exception permitting disclosure without consent is Public Information, defined as information contained in a student record that would not generally be considered harmful or an invasion of

privacy if disclosed, unless the student has notified the Office of the Registrar that such information is to be treated as confidential with respect to him/herself. UC Merced has designated as public the following categories of information regarding students: the student's name, local address(es) and telephone number(s); UC Merced e-mail address; major field of study; dates of attendance; enrollment status (full-time, part-time); degrees and awards received; participation in officially recognized activities; and photographs.

Parental/guardian information is confidential. It is used by the University only for notification of events, ceremonies, awards and development or in case of an emergency involving the student.

 The right to file a complaint with the U.S. Department of Education concerning alleged failures by UC Merced to comply with the requirements of the Federal Educational Rights and Privacy Act, addressed to the Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Avenue, SW., Washington, D.C. 20202-4605

Questions about these rights should be referred to the Registrar at UC Merced.

Students who desire to withhold all information (including address, phone number and UC Merced e-mail address) from the category of public information must file a form in the Office of the Registrar by the tenth day of instruction. If a student does not choose this option, this information may be released and the student's local address, phone number and UC Merced e-mail address will be included in the campus student directory. Students availing themselves of this right should understand what the consequences of such action might be. For example, if all information is designated non-public information, the campus cannot make public any Honors received by the student and cannot include the student's name and degree earned in the campus commencement program without the student's written consent. Similarly, if all information is designated non-public information, the student's status as a student or any degrees earned cannot be verified for potential employers without the student's written consent.

Privacy Act: A student's Social Security number is used to verify personal identity in the UC Merced Student Records System. In accordance with the Federal Privacy Act of 1974, students are hereby notified that disclosure of their social security number is mandatory. This recordkeeping system was established prior to January 1, 1975 pursuant to the authority of The Regents of the University of California under Art. IX, Sec. 9, of the California Constitution.

REGISTER TO VOTE

The 1998 reauthorization of the federal Higher Education Act includes a requirement that higher education institutions make a "good faith effort" to make mail voter registration forms available to all enrolled students. This federal legislation supports the campus' longstanding goals of engendering leadership and citizenship among the student body. UC Merced provides students with several options for registering to vote. Voter registration forms are available at the Office of the Registrar.

CALIFORNIA RESIDENCY AND NONRESIDENT TUITION FEE

Tuition Fee for Nonresident Students

If you have not been living in California with intent to make it your permanent home for more than one year immediately before the residence determination date for each semester in which you propose to attend the University, you must pay a non-resident tuition fee in addition to all other fees. The residence determination date is the day instruction begins at the University of California, Merced.

Law Governing Residence

The rules regarding legal residence for tuition purposes at the University of California are governed by the California Education Code and implemented by the Standing Orders of The Regents of the University of California. Under these rules, adult citizens or certain classes of aliens can establish residence for tuition purposes. There are also particular rules that apply to the residence classification of minors (see below).

Who is a California Resident?

If you are an adult who is not an alien present in the U.S. in a nonimmigrant status which precludes you from establishing domicile in the U.S. (e.g., a B, F, H2, H3, or J visa) and you want to be classified as a resident for tuition purposes, you must have established your continuous presence in California more than one year immediately preceding the residence determination date for the semester during which you propose to attend the University, and

you must have given up any previous residence. You must also present objective evidence that you intend to make California your permanent home. Evidence of intent must be dated one year before the term for which you seek resident classification. If these steps are delayed, the one-year durational period will be extended until you have demonstrated both continuous presence and intent for one full year. Physical presence within the state solely for educational purposes does not constitute the establishment of California residence under state law, regardless of the length of your stay. Your residence cannot be derived from your spouse nor, since you are an adult, from your parents.

Establishing Intent to Become a California Resident

Indications of your intent to make California vour permanent residence can include 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 never had a driver's license from any state, 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 permanent belongings; licensing for professional practice in California; and the absence of these indications in other states during any period for which you claim California residence. Documentary evidence is required. All relevant indications will be considered in determining your classification. Your intent will be guestioned if you return to your prior state of residence when the University is not in session.

Financial Independence Requirement

Effective Fall 1993, if your parents are not residents of California or if you were not previously enrolled in a regular session at any University of California campus, you will be required to be financially independent in order to be a resident for tuition purposes. If you are an adult student and your parents are not California residents, you must demonstrate financial independence, along with physical presence and intent, when seeking resident classification for tuition purposes. You are considered "financially independent" if one or more of the following applies: (1) you are at least 24 years of age by December 31 of

the year you request residence classification; (2) you are a veteran of the U.S. Armed Forces: (3) you are a ward of the court or both of your parents are deceased; (4) you have legal dependents other than a spouse; (5) you are married (or a Registered Domestic Partner) or you are a graduate or professional student and you were not/will not be claimed as an income tax deduction by your parents or any other individual for the tax year preceding the term for which you are requesting resident classification; or (6) you are a single undergraduate student who was 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 years and the current year. Note: Graduate students who are graduate student instructors, teaching or research assistants, or teaching associates employed at 49% time or more (or awarded the equivalent in University-administered funds, e.g., grants, stipends, fellowships) in the term for which resident classification is sought are exempt from the financial independence requirement.

General Rules Applying to Minors

If you are an unmarried minor (under age 18), the residence of the parent with whom you live is considered your residence. 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 a 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 a nonimmigrant status 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 residence must satisfy the one-year durational requirement.

Specific Rules Applying to Minors

- 1. Deceased Parents Even though you are a minor, you may establish your own residence if both of your parents are deceased and a legal guardian has not been appointed for you.
- 2. Divorced/Separated Parents
 If you want to derive California resident status from a California resident parent,

you must move to California to live with that parent before your 18th birthday and establish the requisite intent and remain in California until school begins. Otherwise, you will be treated like any other adult coming to California to establish your legal residence.

3. Parent of Minor Moves from California If you are a minor U.S. citizen or eligible alien whose parent was a resident of California but who left the state within one year of the residence determination date, you are entitled to resident classification if you remain in California after your parent departs, enroll in a California public postsecondary institution within one year of your parent's departure, and, once enrolled, attend continuously until you turn 18.

4. Self-Support

If you are a U.S. citizen or eligible alien and are either a minor or age 18 and can prove that you lived in California for the entire year immediately before the residence determination date, that you have been self-supporting for that year, and that you intend to make California your permanent home, you may be eligible for resident status.

5. Two-Year Care and Control

If you are a U.S. citizen or eligible alien and you lived continuously for at least two years before the residence determination date with an adult who was not your parent but was responsible for your care and control, and who, during the one year immediately preceding the residence determination date was a resident of California, you may be entitled to resident status. This exception continues until you become 18 and have resided in the state long enough to become a resident, as long as you continuously attend an educational institution.

Exemptions from Nonresident Tuition (Proof of Eligibility is Required)

1. Member of the Military

If you are a member of the U.S. military stationed in California on active duty, unless you are assigned for educational purposes to a state-supported institution of higher education, you may be exempt from the nonresident tuition fee until you have lived in California long enough to become a resident. You must provide the residence deputy on campus with a statement from your commanding or personnel officer stating that your assignment to active duty in California is not for educa-

tional purposes. The letter must include the dates of your assignment to the state.

2. Spouse, Registered Domestic Partner or Other Dependents of Military Personnel

You are exempt from payment of the nonresident tuition fee if you are a spouse, Registered Domestic Partner, 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 the nonresident tuition fee each semester you are eligible. If you are enrolled in an 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 the conditions listed above.

3. Child, Spouse or a Registered Domestic Partner of a Faculty Member To the extent funds are available, if you are an unmarried dependent child under age 21 or the spouse (or Registered Domestic Partner) of a member of the University faculty who is a member of the Academic Senate, you may be eligible for a waiver of the nonresident tuition fee. Confirmation of the faculty member's membership on the Academic Senate must be secured each semester before this waiver is granted.

4. Child, Spouse or Registered Domestic Partner of a University Employee

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 National Laboratory or the University of California Washington, DC, Center), you may be eligible for a waiver of the nonresident tuition. The employment status of your parent or spouse (or Registered Domestic Partner) with the University must be ascertained each semester.

5. Spouse, Registered Domestic Partner or Child of Deceased Public Law Enforcement or Fire Suppression Employee

If you are the spouse, Registered Domestic Partner or child of a deceased public law enforcement or fire suppression employee who was a California resident and was killed in the course of fire suppression or law enforcement duties, you may be entitled to a waiver of the nonresident tuition fee.

6. Dependent Child of a California Resident Parent

If you have not been an adult resident of California for more than one year and you are a dependent child of a California resident parent who has been a resident for more than one year immediately before the residence determination date, you may be entitled to a waiver of the nonresident tuition fee until you have resided in California for the minimum time necessary to become a resident as long as you maintain continuous attendance at an educational institution.

7. Native American Graduates of a BIA High School

If you are a graduate of a California high school operated by the Federal Bureau of Indian Affairs, you may be eligible for an exemption from the nonresident fee.

8. Employee of a California Public School District

Any person holding a valid credential authorizing service in the public schools of the state of California who is employed by a school district in a full-time certificate position may be eligible for a nonresident tuition waiver.

9. Student Athlete in Training at U.S. Olympic Training Center, Chula Vista Any amateur student athlete in training at the United States Olympic Training Center in Chula Vista may be eligible for a waiver of the non-resident tuition until he or she has resided in the state the minimum time necessary to become a resident.

10. Graduate of a California High School

You may be entitled to an exemption from nonresident tuition if you attended high school in California for three (3) or more years and graduated from a California high school (or attained the equivalent). You are not eligible for this exemption if you are a nonimmigrant alien.

11. Surviving Dependent of a California Resident Killed in the September 11, 2001 Terrorist Attacks

An undergraduate student who is the surviving dependent of a California resident killed in the September 11, 2001 terrorist attacks on the World Trade Center, the Pentagon Building, or the crash of United Airlines Flight 93, may be exempt from nonresident tuition and mandatory system wide fees. Eligible students must meet the

financial need requirements for the Cal Grant A program.

12. Recipient of a Congressional Medal of Honor or the Child of a Recipient of a Congressional Medal of Honor

An undergraduate student who is a recipient of a Congressional Medal of Honor or who is the dependent child of a recipient of a Congressional Medal of Honor may be exempt from nonresident tuition and mandatory system wide fees. The recipient of the Medal of Honor must be a California resident or must have been a California resident at the time of his or her death. The student may not be older than 27 and the student's annual income may not exceed the national poverty level.

Temporary Absences

If you are a nonresident student who is in the process of establishing California residency for tuition purposes and you leave California during nonacademic periods (for example, to return to your former or parent's home state), 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 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. Again, only strong evidence will rebut the presumption that you are/were in California solely for educational purposes. The burden of proof will be on you to verify that you did nothing inconsistent with your claim of a continuing California residence during your entire absence.

If you are a minor student, your residence is determined by the residence of the parent(s) with whom you live or last lived. You would not lose that residence unless you perform acts inconsistent with a claim of permanent California residence. Some steps that you (or your parent(s) if you are a minor student) should take to retain resident status for tuition purposes are:

 Satisfy California resident income tax obligations. It should be noted that individuals claiming permanent California residence are liable for payment of income taxes on their TOTAL income, including income earned outside the state (abroad or in another state).

- Continue to use a California permanent address ON ALL RECORDS (educational, employment, military, etc.).
- Attend an out-of-state public institution as a non-resident for the entire period of enrollment there.
- Retain your California voter's registration and vote by absentee ballot.
- Maintain a California driver's license and vehicle registration. If it is necessary to change your license or registration while temporarily residing in another state, the license MUST be changed back to California within 10 days of the date of return to the state and the vehicle registration must be changed within 20 days of the date of return.
- Return to California during your vacation periods.

Petitioning for Resident Classification (for continuing students)

If you are a continuing student who is classified as a nonresident for tuition purposes and you believe you will be eligible for resident status, you must file a petition with the University Registrar. The deadline to file the petition is the last working day before the first day of instruction for the term for which you are seeking resident status.

Time Limitation on Providing Documentation

If additional documentation is required for a residence classification but is not readily accessible, you will be allowed until the end of the applicable semester to provide it.

Incorrect Classification

If you were incorrectly classified as a resident, you are subject to reclassification and to payment of all nonresident tuition fees not paid. If you concealed information or furnished false information and were classified incorrectly as a result, you are also subject to University discipline. Resident students who become nonresidents must immediately notify the campus residence deputy.

Inquiries and Appeals

Inquiries regarding residence requirements, determination and/or recognized exceptions should be directed to the Residence Deputy, Office of the Registrar, at UC Merced or the Legal Analyst-Residence Matters, 1111 Franklin Street, 8th Floor,

Oakland, CA 94607-5200. No other University personnel are authorized to supply information relative to residence requirements for tuition purposes. Any student, following a final decision on residence classification, may appeal in writing to the legal analyst within 30 days of notification of the residence deputy's final decision.

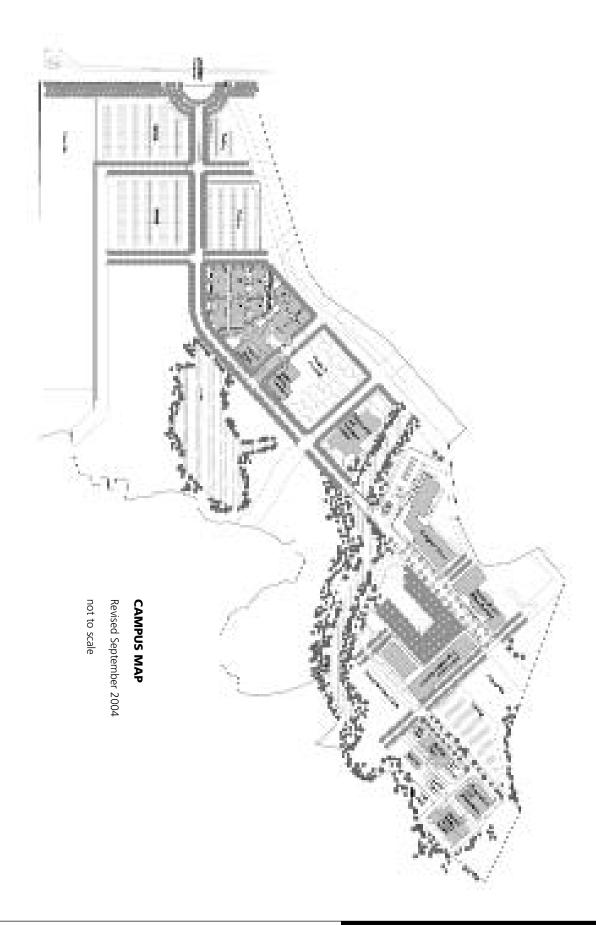
Privacy Notice

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 Office of the Registrar maintains the requested information. You have the right to inspect university records containing the residence information requested on the form

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