

# UCI School of Physical Sciences

Teaching • Research • Service

## DEPARTMENT OF EARTH SYSTEM SCIENCE



### SCHOOL OF PHYSICAL SCIENCES

Established in 1965, the UCI School of Physical Sciences rose to the top echelon of academia in a remarkably short time, and in 1995 became the first public university with two faculty to be awarded the Nobel Prize in two different fields. We offer top-rated educational and research opportunities for tomorrow's scientists, teachers, and technical professionals in the departments of Chemistry, Earth System Science, Mathematics, and Physics & Astronomy. Our world-renowned faculty members and research scientists teach and perform research with undergraduate and graduate students and postdoctoral fellows to explore the ever-advancing frontiers of knowledge.

### DEPARTMENT OF EARTH SYSTEM SCIENCE

Understanding global environmental issues such as global warming, stratospheric ozone depletion, and worldwide air pollution requires the cooperation of scientists across many fields. Global change is projected to accelerate through the 21st century and will impact the ecosystems that preserve the habitability of the planet. The Department of Earth System Science focuses on the atmosphere, land, and oceans, how these interact as a system, and how the Earth will change over a human lifetime. Earth System Science (ESS) is inherently interdisciplinary in scope, linking oceanography, atmospheric and terrestrial sciences, climatology, hydrology, biology, physics, and chemistry to understand the environment. ESS faculty includes chemists, biologists, ecologists, physicists, hydrologists, geologists, meteorologists, engineers, applied mathematicians, and oceanographers. The wide-ranging expertise of ESS faculty and teaching assistants allows students to learn valuable scientific skills in the classroom, laboratory, and field experiences.

The Department of Earth System Science offers a B.S. degree in Earth System Science, and a B.A. degree in Environmental Science.

### B.S. IN EARTH SYSTEM SCIENCE

The Earth System Science (B.S.) program provides students with a fundamental understanding of oceanographic, atmospheric, and terrestrial sciences. The program of study prepares students for careers in science, research, or technical fields. Students learn to apply basic sciences to understand the major processes and systems governing the Earth's climate, biogeochemical cycles, and global change, in addition to understanding relevant scientific literature, methods to collect and analyze data, and interpretation of results. Students learn to explain the current and projected future state of the Earth system and its problems, in the context of past climate change and current human activities.

In addition to the standard degree requirements, there are three optional specializations and one optional concentration available for students.

#### **SPECIALIZATION IN ATMOSPHERIC SCIENCE**

Designed for students interested in the study of the Earth's atmosphere, including weather and climate, and how these conditions affect human activity.

#### **SPECIALIZATION IN OCEANOGRAPHY**

Designed for students interested in the study of the ocean and all its complex relationships with the planet. This includes the study of weather, ocean currents, and sea life.

#### **SPECIALIZATION IN HYDROLOGY AND TERRESTRIAL SYSTEMS**

Designed for students interested in the study of the Earth's water, its movement, and distribution.

#### **CONCENTRATION IN GEOSCIENCES EDUCATION/ SECONDARY TEACHING CERTIFICATION**

Allows for students to earn a bachelor's degree and complete the required coursework and field experience for the California Preliminary Single Subject Teaching Credential at the same time. This is a 4-year program also called the Cal Teach Science & Mathematics Program.

## PROGRAM OF STUDY FOR EARTH SYSTEM SCIENCE

For all ESS majors, assistance in planning a program of study is available from the ESS Department Undergraduate Advisor, as well as from the Academic Counselors in the School of Physical Sciences. The following is a sample plan of courses for Earth System Science majors.

<b>1ST YEAR</b>	Chemistry, Mathematics, Writing, General Education
<b>2ND YEAR</b>	Land/Ocean/Atmosphere Core, Classical Physics, General Education
<b>3RD YEAR</b>	Data Analysis, Lab and Field Methods, General Education
<b>4TH YEAR</b>	Earth System Science Electives, General Education

*More detailed plans can be found in the UCI Catalogue.*

## B.A. IN ENVIRONMENTAL SCIENCE

The Gulf Oil Spill. Global Climate Change. Drought and Water Supply. Each of these topics illustrates the continuing need for environmental professionals with training in the natural sciences, social sciences, economics, and public policy. The Environmental Science (B.A.) program prepares students interested in environmental problem solving by linking an understanding of natural science with socioeconomic factors and public policy. The curriculum combines a quantitative understanding of environmental science, chemistry, and biology with studies of social science, policy, and macro- and microeconomics to provide a foundation for careers in environmental policy, resource management, education, environmental law, and related fields.

The Environmental Science program provides students with a solid foundation to recognize the impacts of human activities on the environment, and in turn the impacts of environmental change on society. Students will understand the mechanisms by which key institutions, policies, and regulations impact ecosystems and the physical environment. Students are also encouraged to focus on a particular area within Environmental Science, these areas include, planning, policy and design, sociology, economics, climatology, water resources, water quality, air pollution, resource management, and atmospheric sciences. One concentration is available.

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## PROGRAM OF STUDY FOR ENVIRONMENTAL SCIENCE

For all Environmental Science majors, assistance in planning a program of study is available from the ESS Department Undergraduate Advisor, as well as from the Academic Counselors in the School of Physical Sciences. The following is a sample plan of courses for Environmental Science majors.

<b>1ST YEAR</b>	Chemistry, Mathematics, Writing, General Education
<b>2ND YEAR</b>	Environmental Issues Core, Environmental Science Electives, General Education
<b>3RD YEAR</b>	Data Analysis, Sustainability, Biological Sciences, General Education
<b>4TH YEAR</b>	Environmental Science Electives, General Education

*More detailed plans can be found in the UCI Catalogue.*

## HONORS PROGRAM IN EARTH SYSTEM SCIENCE

The Honors Program in Earth System Science provides an opportunity for selected students majoring in Earth System Science or Environmental Science to engage in advanced work in one of the research areas of the Department. The program involves both conducting original research and communicating scientific findings. Admission to the program is based on an application submitted in junior year. Applicants must have a grade point average of at least a 3.3 overall, and a 3.4 grade point average in their Earth System Science courses. In selecting students for the program, the Department considers evidence of ability and interest in research. Students complete a year-long series of honors level courses, and submit a formal thesis late in the spring quarter. If all requirements are completed and the student's work and final GPA satisfies the program restrictions, the student will graduate with Honors in Earth System Science, and this distinction is noted on their transcript.

## UNDERGRADUATE MENTORING PROGRAM

The Physical Sciences Undergraduate Mentoring Program (PSUM) is an initiative by the School of Physical Sciences to help undergraduate students succeed both professionally and academically. Students will have the opportunity to meet and converse with professionals from various career paths. The goal is to expose students to career and networking opportunities. Mentors coach students in career and academic decisions.



Photos Courtesy UCI Communications

## ADDITIONAL INFORMATION

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