Earth and Environmental Sciences

Why study earth science? What is it?

- *Continents adrift and colliding*
- *Natural resources*
- *Energy resources and waste disposal*
- *Floods and landslides*
- *Construction siting and materials*
- *Fossils and evolution*
- *Surface and underground waters*
- *Volcanoes and earthquakes*
- *Mountain building and erosion*
- *4.6 billion years of earth history*
- *Environmental education*
- *Remote sensing and spacial information analysis*

Earth and Environmental Sciences

The Department of Earth and Environmental Sciences at California State University, Fresno offers courses leading to the Bachelor of Science and Master of Science in Geology — as well as the Bachelor of Arts in Natural Sciences and the Minor in Geology — which are especially well-suited for primary and secondary teachers.

Collaborating with the Department of Environmental Sciences at the University of California, Riverside, the department also offers a special program leading to the Bachelor of Science in Environmental Sciences. The degree is jointly conferred by California State University, Fresno and the University of California, Riverside.

Coursework and research emphasize field and laboratory investigations of geologic and environmental problems. Our field orientation takes advantage of the university's proximity to the Sierra Nevadas, the California Coast Ranges, coastal California, and the desert provinces. This unique location gives faculty and students access to an unparalleled outdoor laboratory all within short trips from the university.

The department's close relationship with state agencies and the private sector enables many students to pursue internships or part-time employment in geologic and environmental work while they complete their degrees.

The Bachelor of Science in geology prepares students for employment in petroleum geology, mineral exploration, land-use planning, environmental assessment, hydrology, and engineering geology, or for teaching earth science or physical science at the secondary level. The Master of Science program provides a graduate degree for students who want to work in industry or government on the professional level, for students who want to teach earth science in junior college, or for students who wish to pursue further graduate study.

Our applied geology option specializes in engineering geology, hydrogeology, or exploration geology fields, which have the strongest employment potential.

Students may also participate in coursework and research in marine geology and oceanography offered through Moss Landing Marine Laboratories in Monterey Bay. Consult the chairs of the Earth and Environmental Sciences, and Biology departments. See *Moss Landing Marine Laboratories, Biology Department.*

*Approval pending. The B.S. in Environmental Sciences is jointly conferred with UC Riverside.

Facilities and Support

Department equipment includes:

- X-ray fluorescence spectrometer and X-ray diffractometer
- Polarizing microscopes for transmitted and reflected light petrography
- Cathode luminoscope for microscopic study of textures
- Heating-freezing stage for microscopic study of fluid inclusions
- Rock preparation laboratory, which includes crushing and mineral separation facilities, as well as diamond saws and lapping machines for preparing thin and polished sections
- Remote Sensing/Geo Information Systems (GIS)
- Microcomputers and peripherals
- SUN engineering workstations
- Electronic mapping lab
- Fully equipped distance learning instructional lab
- Field and laboratory equipment for water chemistry studies
- Field geophysical instruments: 12 channel seismograph, single channel seismograph DC resistivity meter, magnetometer/gradiometer, laptop computer
- Two four-wheel drive vehicles and three other field vehicles

Career Opportunities

Career pathways in earth science can lead to occupations in:

- environmental, planetary, engineering, structural, petroleum, and mining geology
- volcanology, mineralogy, and hydrogeology
- soil science, sedimentology, and geoarcheology
- oceanography, paleontology, and geomorphology

College of Science and Mathematics

Department of Earth and Environmental Sciences
C. John Suen, *Interim Chair*
Evangelina "Vengie" Balli, *Administrative Support Coordinator*
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http://www.csufresno.edu/geology/

B.S. in Environmental Sciences*

B.S. in Geology

B.A. in Natural Sciences
Option: Earth Science

M.S. in Geology

Minor in Geology

Undergraduate Program

Geology Major. The bachelor's degree with a major in geology consists of 125-133 units, including 44-45 units of geology. For general degree requirements see *Degree Requirements*. Students planning graduate study are advised to meet the foreign language requirements of the institutions they plan to attend.

High School Preparation. Adequate high school preparation for a major in geology will facilitate the progress of students through our program. This preparation should include: algebra (2 years), plane and solid geometry, trigonometry, chemistry, physics or biology, and English (4 years).

Faculty

C. John Suen, *Interim Chair*
Frederika J.M. Harmsen, *Graduate Adviser*
Arthur H. Barabas
Bruce A. Blackerby
Roland H. Brady
Stephen D. Lewis
Robert D. Merrill