

# GEOLOGY (GEOL)

## GEOL-104

### Earth Science

3 UNITS

3.0 hours lecture

This course is designed for Liberal Studies education majors wishing to satisfy requirements for California Multiple Subject Teaching Credentials. This physical science course describes and explains the Earth's major physical systems, the basic energy and material flows by which these systems operate, and the comparative place of our planet within the larger solar systems. As such, this course provides a brief synthesis of the disciplines of astronomy, physical geography, meteorology, oceanography, and geology. (CSU/UC) (AA/AS-B2, CSU-B1, IGETC-5A)

## GEOL-110

### Planet Earth

3 UNITS

3.0 hours lecture

This introductory physical science course investigates the composition of the earth and the geologic processes by which it formed. Emphasis is placed on the earth's unifying theory plate tectonics and the associated activities of volcanism, earthquakes, and mountain building. Topics will include crystals, minerals and rocks, their distribution within the planet, and the evolution of the earth across deep time. The sculpturing of the surface of the planet by wind, waves, streams, glaciers, and landslides will also be considered. (C-ID GEOL 100) (CSU/UC) (AA/AS-B2, CSU-B1, IGETC-5A)

## GEOL-111

### Planet Earth Laboratory

1 UNITS

Prerequisite: "C" grade or higher or "Pass" or concurrent enrollment in GEOL 110 or equivalent.

3.0 hours laboratory

Provides hands-on experience to accompany and augment Geology 110. This course will include laboratory and field investigations of the Earth, emphasizing experience with minerals, rocks, and fossils, as well as interpreting topographic and geologic maps. Field trips will acquaint students with local rock units, and past and present geologic processes. (C-ID GEOL 110L) (CSU/UC) (AA/AS-B2, CSU-B3, IGETC-5C)

## GEOL-121

### Earth History

4 UNITS

Recommended Preparation: A "C" grade or higher or "Pass" in Geology 104 or 110 or equivalent.

3.0 hours lecture, 3.0 hours laboratory

This is a required course for geology majors and minors. The lecture portion will cover the geologic and tectonic development of earth and its importance to the evolution of life on this planet as evidenced in the fossil record. Laboratory work will include, but is not limited to, the detailed study of sedimentary petrology, stratigraphy, identification of fossil phyla, and local field investigations. Emphasis will be placed on the application of rock and fossil interpretations to the reconstruction of ancient environments and their evolution through geologic time. (C-ID GEOL 111) (CSU/UC) (AA/AS-B2, CSU-B1,B3, IGETC-5A,5C)

## GEOL-150

### Field Study of the Natural History of the Greater San Diego

#### Region

3 UNITS

Prerequisite: "C" grade or higher or "Pass" in BIO 110 or 120; or GEOG 120 or 121 or 140; or GEOL 110 or 111; or OCEA 112 or equivalent.

2.0 hours lecture, 3.0 hours laboratory

An exciting, team-taught, interdisciplinary, field-based study of the natural environment of the San Diego region, including related parts of Imperial, Riverside, and Orange Counties. Vans are utilized to visit sites that best illustrate (1) the region's physical environment (including tectonics, geologic history, geomorphology, hydrology, meteorology, climatology, and soils), (2) the evolutionary response to environmental variation (focusing on coastal sage scrub, chaparral, and desert ecosystems), and (3) the interaction of humans with the natural environment. Emphasis on field measurement includes use of GPS, compass, clinometer, maps, the current Jepson plant taxonomy, etc. Four weekends in spring semester only. Overnight campouts required. Students with credit in Geology 150 will not be able to enroll in Biology 150, Geography 150 or Oceanography 150. (CSU/UC)

## GEOL-162

### Geologic Field Studies: Southern California Mountain Areas

1 UNITS

1.0 hours lecture

This course involves lecture and field study of geologic processes and features in selected areas of the southern California mountains. Lectures will examine the regional geomorphic features, identify the specific rock types, and discuss the tectonic setting of the area to be visited, with emphasis on the overall geologic evolution of the area. Study areas will include, but are not limited to, various locations within the Peninsular Ranges and Transverse Ranges. Students are trained in various field study techniques such as map and cross-section development, identification of geologic specimens, and the use of geologic instruments. The course requires field trip travel, often including overnight camping and light to moderate hiking. (CSU)

## GEOL-163

### Geologic Field Studies: Mojave Desert and Adjacent Areas

1 UNITS

1.0 hours lecture

This course involves lecture and field study of geologic processes and features in selected areas of the Mojave Desert and adjacent areas. Lectures will examine the regional geomorphic features, identify the specific rock types, and discuss the tectonic setting of the area to be visited, with emphasis on the overall geologic evolution of the area. Study areas will include, but are not limited to, various locations within the Mojave Desert and Joshua Tree National Park. Students are trained in various field study techniques such as map and cross-section development, identification of geologic specimens, and the use of geologic instruments. The course requires field trip travel, often including overnight camping and light to moderate hiking. (CSU)

**GEOL-164**

**Geologic Field Studies: Southern California Coastal Areas**      **1 UNITS**  
1.0 hours lecture

This course involves lecture and field study of geologic processes and features in selected areas of the southern California coastline. Lectures will examine the regional geomorphic features, identify the specific rock types, and discuss the tectonic setting of the area to be visited, with emphasis on the overall geologic evolution of the area. Study areas will include, but are not limited to, various locations within the Channel Islands, southern Coast Ranges, and coastal regions from San Diego County northward to Santa Barbara County. Students are trained in various field study techniques such as map and cross-section development, identification of geologic specimens and the use of geologic instruments. The course requires field trip travel, often including overnight camping, kayaking and light to moderate hiking. (CSU)

**GEOL-165**

**Geologic Field Studies: Colorado Desert/Salton Trough Area**      **1 UNITS**  
1.0 hours lecture

This course involves lecture and field study of geologic processes and features in selected areas of the Colorado Desert/Salton Trough region. Lectures will examine the regional geomorphic features, identify the specific rock types, and discuss the tectonic setting of the area to be visited, with emphasis on the overall geologic evolution of the area. Study areas will include, but are not limited to, various locations within the Anza Borrego Desert State Park and the Salton Trough. Students are trained in various field study techniques such as map and cross-section development, identification of geologic specimens, and the use of geologic instruments. The course requires field trip travel, often including overnight camping and light to moderate hiking. (CSU)

**GEOL-172**

**Field Exploration: Colorado Plateau**      **3 UNITS**  
2.0 hours lecture, 3.0 hours laboratory

This week-long course involves lecture and field study of natural processes and features in selected areas of the Colorado Plateau. Lectures en route and on site may include the origin, evolution, and significance of the region's tectonic setting, geomorphic features, hydrology, native plants, and weather. The course may also examine human-environment interactions as well as spatial and temporal variations in areas such as the Grand Canyon, Zion National Park, Sunset Crater, and the Mogollon Rim. Students will learn various field study techniques including map interpretation, map analysis, and the use of field instruments including mineral and rock identification tools, compasses, and global positioning devices (GPS). The course requires field trip travel, including overnight camping and light to moderate hiking. (CSU)

**GEOL-173**

**Field Exploration: Cascade Range/Modoc Plateau**      **3 UNITS**  
2.0 hours lecture, 3.0 hours laboratory

This week-long course involves lecture and field study of natural processes and features in selected areas of the southern Cascade Range and the Modoc Plateau. Lectures en route and on site may include origin, evolution, and significance of the region's tectonic setting, geomorphic features, hydrology, native plants and weather. The course may also examine human-environment interactions as well as spatial and temporal variations in areas such as Lava Beds National Monument, McArthur-Burney Falls State Park, and Lassen Volcanic National Park. Students will learn various field study techniques including map interpretation, map analysis, and the use of field instruments including mineral and rock identification tools, compasses, and global positioning devices (GPS). The course requires field trip travel, including overnight camping and light to moderate hiking. (CSU)

**GEOL-174**

**Field Exploration: Basin and Range Province**      **3 UNITS**  
2.0 hours lecture, 3.0 hours laboratory

This week-long course involves lecture and field study of natural processes and features in selected areas of the Basin and Range Province. Lectures en route and on site may include the origin, evolution, and significance of the region's tectonic setting, geomorphic features, hydrology, native plants, and weather. The course may also examine human-environment interactions as well as spatial and temporal variations in areas such as Owens Valley, Death Valley, the Lake Mead area, and Great Basin National Park. Students will learn various field study techniques including map interpretations, map analysis, and the use of field instruments including mineral and rock identification tools, compasses, and global positioning devices (GPS). The course requires field trip travel, including overnight camping and light to moderate hiking. (CSU)

**GEOL-175**

**Field Exploration: California Coastal Mountains**      **3 UNITS**  
2.0 hours lecture, 3.0 hours laboratory

This week-long course involves lecture and field study of natural processes and features in selected areas of the California coastal mountain region. Lectures en route and on site will examine the origin, evolution, and significance of the region's tectonic setting, geomorphic features, hydrology, native plants, and weather. The course may also examine human-environment interactions as well as spatial and temporal variations in areas such as along the San Andreas fault system, the Coast Ranges, and the Klamath Mountains. Students will learn various field study techniques including map interpretation, map analysis, and the use of field instruments including mineral and rock identification tools, compasses, and global positioning devices (GPS). The course requires field trip travel, often including overnight camping and light to moderate hiking. (CSU)

**GEOL-176****Field Exploration: Sierra Nevada****3 UNITS**

2.0 hours lecture, 3.0 hours laboratory

This week-long course involves lecture and field study of natural processes and features in selected areas of the Sierra Nevada mountains. Lectures en route and on site may include the origin, evolution, and significance of the region's tectonic setting, geomorphic features, hydrology, native plants, and weather. The course may also examine human-environment interactions as well as spatial and temporal variations in areas such as the Yosemite, Sequoia, and Kings Canyon National Parks, the Mammoth Lakes area, and Mono Basin. Students will learn various field study techniques including map interpretation, map analysis, and the use of field instruments including mineral and rock identification tools, compasses, and global positioning devices (GPS). The course requires field trip travel, including overnight camping and light to moderate hiking. (CSU)

**GEOL-210****Geology of California****3 UNITS**

3.0 hours lecture

This course examines the development of California's landscape and scenery by various tectonic and geomorphic processes throughout geologic time. Each of California's physiographic provinces will be studied in terms of geologic structures, natural resources, minerals, rock and fossil occurrences, and natural hazards. Field trips may be required. (CSU/UC) (AA/AS-B2, CSU-B1, IGETC-5A)

**GEOL-220****Geology of the National Parks****3 UNITS**

3.0 hours lecture

This course explores the most distinctive and intriguing geological features of America's National Parks. Each park will be examined separately in slide show/ travelogue format, with emphasis placed on their formation and evolution. The theory of plate tectonics will provide the organizational structure for the course with each park representing a distinct stage in the Wilson Cycle. (CSU) (AA/AS-B2, CSU-B1)

**GEOL-230****Natural Disasters****3 UNITS**

3.0 hours lecture

This course examines the geological and meteorological principles underlying natural disasters such as earthquakes, landslides, flooding, volcanic eruptions, and severe weather phenomena. Students will explore how dynamic earth processes affect human activities and discuss options for mitigation of these natural phenomena. (CSU/UC)