

2011-13 Cal Poly Catalog

Physics Department

GEOL–GEOLOGY

GEOL 102 Introduction to Geology (4) GE B3

Processes responsible for the Earth's minerals, rocks, and structure surface features. Volcanism; mountain building; plate tectonics; weathering. Erosion and deposition by streams, glaciers, wind and waves. Geological resources, earth hazards, and interaction of man with global processes.

–4–3 lectures, 1 discussion. Fulfills GE B3. *Change effective Winter 2013.*

GEOL 200 Special Problems for Undergraduates (1-2)

Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter. Prerequisites: Consent of department chair.

GEOL 201 Physical Geology (3)

Processes responsible for the Earth's rocks, structural surface features, geologic hazards, and natural resources, with emphasis on interactions with human activities. 3 lectures. Prerequisite: MATH 119.

GEOL 203 Fossils and the History of Life (4) GE B5

Fossil record. Geologic time scale. Evolution and the fossil record. Evolution – creation controversy. Early earth and early life. Features, lifestyles, origins, and histories of major invertebrate, vertebrate, and plant groups. Mass extinctions. 3 lectures, 1 discussion. Fulfills GE B5.

GEOL 204 Geologic History of California (3)

Development of California through geologic time. Where and why the rocks appeared. Movement on faults, and mountain building. Geologic processes at work today and yesterday. Relationship of California geology to the rest of the world. 3 lectures.

GEOL 205 Earthquakes (4) GE B3

World-wide seismicity and plate tectonics. Seismic waves and their recording. Earth structure and composition. Intensity, magnitude, and energy. Major California faults and earthquakes. Paleoseismology, forecasting and prediction. Acceleration, resonance, and effects of ground shaking on structures. Earthquake safety. Tsunamis. 3 lectures, 1 discussion. Fulfills GE B3.

GEOL 206 Geologic Excursions (1) (CR/NC)

Field trips to places of geologic interest. The Schedule of Classes will indicate destinations. Students must provide their own transportation, food, and camping equipment. May be repeated for a maximum of 3 units provided field trips are taken to different locations. Credit/No Credit grading only. 1 laboratory.

GEOL 241 Physical Geology Laboratory (1)

Properties and identification of minerals and rocks. Topographic maps and landform analysis. Geologic maps and interpretation of rock structure. 1 laboratory. Prerequisite or concurrent: GEOL 102 or GEOL 201.

GEOL 270 Selected Topics (1–4)

Directed group study of selected topics. The Schedule of Classes will list title selected. Total credit limited to 8 units. 1 to 4 lectures. Prerequisite: Consent of instructor.

GEOL 305 Fundamentals of Seismology (4) GE B6

Theory of plate tectonics. Elastic waves in layered media. Principle of the seismometer. Seismic properties, structure and composition throughout the Earth. Intensity, magnitude, and seismic moment and energy calculations. Major California faults and earthquakes. Paleoseismology, forecasting and prediction. Analysis of ground motion. Resonance. Effects of ground shaking on structures and bodies of water. Earthquake safety. 3 lectures, 1 discussion. Prerequisite: PHYS 132. Fulfills GE B6.

GEOL 310 Igneous and Metamorphic Petrology (4)

Processes associated with melting, igneous crystallization, and metamorphism of igneous and sedimentary rocks. Special attention to relationships with tectonic setting. Required field trip. 3 lectures, 1 laboratory. Prerequisite: GEOL 102 or GEOL 201, and ERSC 223.

GEOL 330 Principles of Stratigraphy (4)

Description and analysis of stratified rock and sediment. Sedimentology, diagenesis, transgressive/regressive sequences, bedform interpretation, marine and terrestrial sediment and sedimentary-rock sequence interpretation, and sequence stratigraphy. Required field trips. 3 lectures, 1 laboratory. Prerequisite: GEOL 102 or GEOL 201, and GEOL 241.

GEOL 400 Special Problems for Advanced Undergraduates (1-2)

Individual investigations, research, studies, or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter. Prerequisite: Consent of department chair.

GEOL 401 Field-Geology Methods (4)

Collecting and interpreting field-geologic data. Description of sedimentary rocks and construction of stratigraphic columns. Mapping geologic structures in the field. Surficial geologic stratigraphy and surficial geologic mapping. Understanding geologic processes through field study. Communicating results of field study. 1 lecture, 3 activities. Prerequisite: GEOL 102 or GEOL 201, GEOL 241, GEOL 415, ERSC 223, ERSC 323. *Crosslisted as ERSC/GEOL 401.*

GEOL 402 Geologic Mapping (4)

Bedrock geologic mapping on topographic maps and aerial photos. Surficial geologic mapping on topographic maps and aerial photos. Correlating and defining surficial geologic map units on the basis of soil development. Understanding landscape evolution using soil development 4 activities. Prerequisite: ERSC/GEOL 401. *Crosslisted as ERSC/GEOL 402.*

GEOL 415 Structural Geology (4)

Recognition, interpretation, and depiction of geological structures. Understanding rock deformation through the study of faults and folds. 3 lectures, 1 laboratory. Required weekend field trips. Prerequisite: GEOL 241 and ERSC 223.

GEOL 420 Applied Geophysics (3)

Introduction to geophysical exploration of the shallow subsurface: seismic refraction, seismic reflection, electrical resistivity, magnetic and gravity methods. Application to determination of subsurface structure, groundwater and mineral resources. 2 lectures, 1 laboratory. Prerequisite: PHYS 132, GEOL 201. Recommended: STAT 218 or equivalent.

GEOL 470 Selected Advanced Topics (1–4)

Directed group study of selected topics for advanced students. Open to undergraduate and graduate students. The Schedule of Classes will list title selected. Total credit limited to 8 units. 1 to 4 lectures. Prerequisite: Consent of instructor.

GEOL 471 Selected Advanced Laboratory (1–4)

Directed group laboratory study of selected topics for advanced students. Open to undergraduate and graduate students. The Schedule of Classes will list title selected. Total credit limited to 8 units. 1 to 4 laboratories. Prerequisite: Consent of instructor.