GEOLOGY (GEOL)

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GEOL Courses

GEOL 2200 Special Problems for Undergraduates (1-2 units)
Term Typically Offered: F, SP
Prerequisite: Consent of instructor.

Individual investigation, research, studies, or surveys of selected problems. Repeatable up to 4 units. Formerly GEOL 200.

GEOL 2203 The Geologic Record: Fossils and the History of Life (3 units)
Term Typically Offered: F
2026-28 or later catalog: GE Area 5A
2020-26 catalogs: GE Area B1

A historical account of life on Earth interpreted from the fossil record. Paleoenvironmental controls on the rise and decline of lineages of organisms deduced from stratigraphy, and from the composition, character, and geochemistry of sedimentary rocks. Identification of fossils. 2 lectures, 1 discussion. Fulfills GE Area 5A (GE Area B1 for students on the 2020-26 catalogs). Formerly GEOL 203.

GEOL 2206 Geologic Excursions (1 unit)
Term Typically Offered: F, SP
CR/NC

Field trips to places of geologic interest. Students must provide their own transportation, food, and camping equipment. Field trip required. Credit/No Credit grading only. 1 laboratory. Formerly GEOL 206.

GEOL 2240 Physical Geology (3 units)
Term Typically Offered: F, SP
Prerequisite: MATH 119 or MATH 1007.

Processes responsible for the Earth's minerals, rocks, structural, and surface features. Volcanism, mountain building, plate tectonics, and weathering. Erosion and deposition by streams, glaciers, wind, and waves. Geological resources, earth hazards, and interaction of man with global processes. 2 lectures, 1 discussion. Formerly GEOL 201.

GEOL 2241 Physical Geology Laboratory (1 unit)
Term Typically Offered: F, SP
Corequisite: GEOL 201 or GEOL 2240.

Properties and identification of minerals and rocks. Topographic maps and landform analysis. Geologic maps and interpretation of rock structure. Field trip required. 1 laboratory. Formerly GEOL 241.

GEOL 2270 Special Topics (1-3 units)
Term Typically Offered: TBD
Prerequisite: Consent of instructor.

Directed group study of special topics. The Class Schedule will list topic selected. Repeatable up to 6 units. 1 to 3 lectures. Formerly GEOL 270.

GEOL 3301 Computation in the Geosciences: Time Series and Statistical Methods (3 units)
Term Typically Offered: F
Prerequisite: GEOL 301 or GEOL 2240; PHYS 141 or PHYS 1141; one of the following: MATH 143, MATH 121, MATH 1262, MATH 1263, or DATA/MATH 1264; and one of the following: STAT 217, STAT 218, STAT 301, STAT 312, STAT 321, STAT 1110, STAT 1510, or STAT 3210.

Introduction to scientific programming, frequency domain analysis of sampled data, statistical description and analysis, and physical models in the geosciences. Content drawn from geodynamics, environmental geology, geochemistry, and hydrology. 2 lectures, 1 laboratory. Formerly GEOL 303.

GEOL 3305 Seismology and Earth Structure (3 units)
Term Typically Offered: SP
Prerequisite: GEOL 303 or GEOL 3301; or PHYS 141 or PHYS 1141 and one of the following: MATH 242, MATH 244, MATH 2341, or MATH 2343.

Elastic wave propagation in layered media. Inference of structure and composition of the Earth with special emphasis on crustal structure. Magnitude calculation. Earthquake source mechanics applied to problems in tectonics. Major California faults and paleoseismology. Field trip required. 2 lectures, 1 laboratory.

GEOL 3310 Igneous and Metamorphic Petrology (4 units)
Term Typically Offered: F
Prerequisite: GEOL 201 or GEOL 2240; and GEOL 241 or GEOL 2241.

Characterization and genesis of igneous and metamorphic minerals, textures and fabrics. Processes associated with igneous melt generation, evolution and crystallization. Principles of metamorphic reactions in rocks with different initial compositions. Special attention to relationships with tectonic settings. Field trip required. 3 lectures, 1 laboratory. Formerly GEOL 309.

GEOL 3330 Principles of Stratigraphy (3 units)
Term Typically Offered: SP
Prerequisite: GEOL 201 or GEOL 2240; and GEOL 241 or GEOL 2241.

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. Field trip required. 2 lectures, 1 laboratory. Formerly GEOL 330.

GEOL 4400 Special Problems for Advanced Undergraduates (1-2 units)
Term Typically Offered: F, SP
Prerequisite: Consent of instructor.

Individual investigations, research, studies, or surveys of selected problems. Repeatable up to 4 units. Formerly GEOL 400.

GEOL 4404 Research Experience for Advanced Undergraduates (1-2 units)
Term Typically Offered: F, SP
CR/NC
Prerequisite: Consent of instructor.

Individual investigations, research, studies, or surveys of selected problems. Credit/No Credit grading only. Repeatable up to 4 units. Formerly GEOL 404.

GEOL 4415 Structural Geology (3 units)
Term Typically Offered: F
Prerequisite: GEOL 309 or GEOL 3310.

Methods for the representation and quantification of stress in the Earth's lithosphere. Recognition, depiction and interpretation of geologic structures including faults, folds, and foliation, and their relationship to different tectonic settings. Field trip required. 2 lectures, 1 laboratory. Formerly GEOL 415.

GEOL 4417 Field Geology Methods and Mapping (5 units)
Term Typically Offered: SP
Prerequisite: GEOL 330 or GEOL 3330; and GEOL 415 or GEOL 4415.

Collecting and interpreting geologic field data. Structural, bedrock, and surficial geology mapping on topographic maps. Igneous rock fabrics. Description of sedimentary rocks. Construction of stratigraphic columns. Reconstructing geologic events and processes. Communication and interpretation of field results. Field trip required. 2 lecture, 3 activities. Formerly GEOL 417.

GEOL 4420 Field Geophysics (3 units)
Term Typically Offered: F
Prerequisite: GEOL 201 or GEOL 2240; and one of the following: PHYS 121, PHYS 141, PHYS 1121 or PHYS 1141.

Geophysical exploration of the shallow subsurface: seismic refraction, seismic reflection, and electrical resistivity methods. Application of near-surface geophysical data to determination of geological structure, hydrogeology, and mineral resources. Field trip required. 2 lectures, 1 laboratory. Formerly GEOL 420.

GEOL 4470 Special Advanced Topics (1-3 units)
Term Typically Offered: TBD
Prerequisite: Consent of instructor.

Directed group study of special topics for advanced students. The Class Schedule will list topic selected. Repeatable up to 6 units. 1 to 3 lectures. Formerly GEOL 470.

GEOL 4471 Special Advanced Laboratory (1-3 units)
Term Typically Offered: TBD
Prerequisite: Consent of instructor.

Directed group laboratory study of special topics for advanced students. The Class Schedule will list topic selected. Repeatable up to 6 units. 1 to 3 laboratories. Formerly GEOL 471.