

FR 468 Workshop in French (1–3). As announced. (May be repeated for a maximum of 6 credits.)

FR 491 Directed Study (1–3). Independent study. (May be repeated for a maximum of 4 credits.) Prerequisite: consent of instructor.

FR 493 Topics in French (1–3). As announced. (May be repeated for credit.)

Geography (GEOG)

GEOG/ANTH 103 Humans and Their Environments (3).

GEOG/ANTH 233 People and Cultures of the World (3).

GEOG/GEOL 304 Geomorphology (3). Concurrent enrollment: GEOG/GEOL 304L.

GEOG/GEOL 304L Geomorphology Laboratory (1). Concurrent enrollment: GEOG/GEOL 304.

Geology (GEOL)

GEOL 113 The Geological Environment (3). Geological processes and hazards, resources and environmental problems including pollution, global warming and waste disposal. For non-majors only. GEOL 113L optional. (F, S)

GEOL 113L The Geological Environment Laboratory (1). Materials and processes of the solid earth. Optional: if taken, a student must enroll concurrently in GEOL 113 or after taking GEOL 113.

GEOL 123 Earth Resources (3). The occurrence, exploitation and use of Earth resources including metals, agricultural chemicals and minerals, industrial rocks and minerals, energy resources, soil and water resources. GEOL 123L is optional. (F)

GEOL 123L Earth Resources Laboratory (1). Identification and study of important rock and mineral commodities. Solving of practical problems faced by resource geologists. Concurrent enrollment: GEOL 123. (F)

GEOL 151 Physical Geology (3). The study of earth materials and the important internal and surface processes shaping the earth. A field trip is required. Concurrent enrollment: GEOL 151L. (F)

GEOL 151L Physical Geology Laboratory (1). Materials and processes of the solid earth. Three hours laboratory work per week. Concurrent enrollment: GEOL 151. (F)

GEOL 152 Historical Geology (3). Evolution of the earth's surface and the biosphere; ancient environments and plate tectonics. A field trip is required. Prerequisites: GEOL 113/113L or 151/151L. Concurrent enrollment: GEOL 152L. (S)

GEOL 152L Historical Geology Laboratory (1). Fossils, geological environments and processes. Three hours laboratory work per week. Concurrent enrollment: GEOL 152. (S)

GEOL 268 Workshop in Geology (1–3). As announced. (May be repeated for a maximum of 4 hours.)

GEOL 293 Topics in Geology (1–3). As announced. (May be repeated for credit with permission of advisor.)

GEOL/BIOL 302 Invertebrate Paleontology (3). Morphology, classification and phylogeny of invertebrate fossils. Fossils in stratigraphic correlation and in reconstruction of sedimentary paleoenvironments. A field trip is required. Prerequisites: GEOL 152/152L (open to biology majors without prerequisite). Concurrent enrollment: GEOL 302L. (Alt F)

GEOL/BIOL 302L Invertebrate Paleontology Laboratory (1). Identification, morphology and practical applications of invertebrate fossils. Three hours laboratory work per week. Concurrent enrollment: GEOL 302. (Alt F)

GEOL 303 Crystallography-Mineralogy (3). Crystal symmetry, crystal chemistry, optical and x-ray crystallography, systematic mineralogy. A field trip is required. Prerequisites: CHEM 151/151L, 152/152L (completed or in progress). Concurrent enrollment: GEOL 303L. (Alt F)

GEOL 303L Crystallography-Mineralogy Laboratory (1). Crystal symmetry; identification of minerals using physical and optical properties and x-ray diffraction. Three hours laboratory work per week. Concurrent enrollment: GEOL 303. (Alt F)

GEOL/GEOL 304 Geomorphology (3). The origin and development of landforms and relationship of geomorphic principles to human activities. One or more field trips required. Prerequisites: GEOL 151/151L. Concurrent enrollment: GEOL 304L. (Alt S)

GEOL/GEOL 304L Geomorphology Laboratory (1). Laboratory analysis of landforms and topographic features; topographic maps and photointerpretation. Three hours laboratory per week. Concurrent enrollment: GEOL 304. (Alt S)

GEOL 311 Stratigraphy and Sedimentation (3). Correlation of stratigraphic units; interpretation of ancient environments from the sedimentary rock record; methods of stratigraphic and sedimentological analysis. A field trip is required. Prerequisites: GEOL 152/152L. Concurrent enrollment: GEOL 311L. (Alt S)

GEOL 311L Stratigraphy and Sedimentation Laboratory (1). Rock types, environments of deposition and stratigraphic mapping. Three hours laboratory work per week. Concurrent enrollment: GEOL 311. (Alt S)

GEOL 312 Structural Geology (3). Description, classification and origin of folds, faults, joints and other geologic structures; theory of stereographic projections and structural geologic map interpretation. A field trip is required. Prerequisites: GEOL 151/151L; MATH 120. Concurrent enrollment: GEOL 312L. (Alt S)

GEOL 312L Structural Geology Laboratory (1). Visualizing structures in three dimensions; line projections, solid geometry, faulting and geologic mapping. Three hours laboratory work per week. Concurrent enrollment: GEOL 312. (Alt S)

GEOL 313 Photogeology (2). Aerial photographs for interpretation of geological features; photogrammetric principles and methods of photogeologic mapping. Prerequisites: GEOL 304/304L. Concurrent enrollment: GEOL 313L. (Alt S)

GEOL 313L Photogeology Laboratory (1). Photogrammetric principles and photointerpretation; preparation of photogeologic maps. Four hours laboratory work per week. Concurrent enrollment: GEOL 313. (Alt S)

GEOL 324 Regional Field Geology (1). Mandatory attendance on eight-to-ten-day field trip, one two-hour classroom or field session per week before and after the trip. The structure, stratigraphy, geomorphology, economic geology and other pertinent geologic characteristics of selected areas; field instrumental methods. Preparation of a road log and/or other assigned material in addition to examination. (May be repeated up to 4 hours.) Students will be required to pay their own expenses. Prerequisites: GEOL 151/151L, 152/152L. (S)

GEOL 332 Geologic Instruments and Field Methods (1). The theory of the Brunton compass, telescopic alidade, altimeter; application to field problems. One four-hour class/field period per week. Prerequisites: GEOL 151/151L, 152/152L; MATH 120. (Alt S)

GEOL 351 Petrology (3). The classification, description and genesis of igneous, sedimentary, and metamorphic rocks. One or more field trips are required. Prerequisites: GEOL 201/201L. Concurrent enrollment: GEOL 351L. (Alt S)

GEOL 351L Petrology Laboratory (1). Identification and description of igneous, sedimentary, and metamorphic rocks in hand specimen and thin section. Three hours laboratory per week. Prerequisites: GEOL 201/201L. Concurrent enrollment: GEOL 351. (Alt S)

GEOL 403 Petroleum Geology (3). Theory regarding the origin, migration and accumulation of oil and gas; types of reservoirs; exploration and development of fields. A field trip is required. Prerequisites: GEOL 311/311L, 312/312L. Concurrent enrollment: GEOL 403L. (Alt F)

GEOL 403L Petroleum Geology Laboratory (1). Exercises that simulate work done by petroleum geologists. Problems of contouring, log interpretation and correlation, and other analyses of oil fields and well records. Three hours laboratory per week. Concurrent enrollment: GEOL 403. (Alt F)

GEOL 410 Environmental Geology (3). The human relationship to the geologic environment: resources, utilization and exploitation; how geologic processes past and present have altered economic and sociological patterns. Prerequisite: consent of instructor.

GEOL 417 Economic Geology (3). Occurrence, classification, temporal and spatial distribution and origin of metallic mineral deposits; exploration, development and mining of deposits. One or more field trips are required. Prerequisites: GEOL 351/351L. Concurrent enrollment: GEOL 417L. (Alt S)

GEOL 417L Economic Geology Laboratory (1). Study of ore sites and exploration techniques. Three hours laboratory per week. Concurrent enrollment: GEOL 417.

GEOL 420 Environmental Geochemistry (3). Review of basic chemical concepts. Geochemistry of natural waters, soil and the atmosphere. Water, soil and air pollution, hazardous waste, and toxicology. Prerequisite: GEOL 113 or GEOL 151. (S)

GEOL 424 Geology Summer Field Camp (8). Geological field procedures, techniques, and instrumentation used in field work in the classic geological areas of the southwest—Arizona, New Mexico, Utah and Colorado. Students are required to pay transportation, food, housing and lab fee to cover course expense. Prerequisites: GEOL 151/151L, 152/152L.

GEOL 439 Teaching in Geology (1). Methods, resources, safety and lesson plans in teaching geology lecture and laboratory. Prerequisites: GEOL 151/151L, 152/152L; senior standing with major or minor in science; consent of instructor. Open only to students working toward teaching licensure. Concurrent enrollment: CHEM 439 and PHYS 439. (F)

GEOL/PHYS 450 Principles of Geophysics (3). The application of basic principles of physics and geology to the study of the earth, with an emphasis on applications to petroleum exploration. Prerequisites: GEOL 311/311L, 312/312L; PHYS 303, 305L. Concurrent enrollment: GEOL 450L.

GEOL/PHYS 450L Principles of Geophysics Laboratory (1). Collection and interpretation of gravimetric, seismic and sonic data. Concurrent enrollment: GEOL 450.

GEOL/CHEM 454 Geochemistry (3). Application of chemical principles to the study of geologic systems, aqueous geochemistry; crystal chemistry; surface chemistry; thermodynamics; oxidation-reduction; radioactive crystal chemistry; surface chemistry; thermodynamics; oxidation-reduction; radioactive and stable isotopes; kinetics. Prerequisites: CHEM 151/151L, 152/152L; GEOL 301/301L. (Alt S)

GEOL 465 Senior Research Project (2). A project for student research; includes original research in geologic mapping (surface or subsurface), or other project deemed fitting; procedures of writing and illustrating the report. Prerequisites: senior standing; at least 24 hours GEOL; consent of instructor.

GEOL 468 Workshop in Geology (1–3). As announced. (May be repeated for a maximum of 6 hours.)

GEOL/BIO/CHEM/PHYS/ANTH 475 Scanning Electron Microscopy (2). Basic concepts of electron optics, resolution, scanning theory and image formation in the operation of the scanning electron microscope. Laboratory work will include SEM general maintenance, scope alignment, sample preparation and photographic procedures. One hour lecture and three hours laboratory weekly. Lab fee charged to cover laboratory material. Prerequisite: junior standing. (F)

GEOL 481 Geological Literature and Writing (1). (May be repeated for a maximum of 3 hours.) Prerequisite: consent of instructor.

GEOL 482 Geology of New Mexico (2). The stratigraphic, structural and geomorphic history of New Mexico. May not be taken in lieu of General Education science requirement. Field trip required. Prerequisites: GEOL 113/113L or 151/151L. (Alt S)

GEOL 484 Geology of Western National Parks (3). National parks in the American West: Structure, stratigraphy and physiographic evolution. A field trip is required. Prerequisites: GEOL 113/113L or 151/151L. (Alt S)

GEOL 491 Directed Study (1–3). Independent study. (May be repeated for a maximum of 4 hours.)

GEOL 493 Topics in Geology (1–3). As announced. (May be repeated for credit.)

GEOL 494 Senior Seminar (1–2). Selected professional topics. (May be repeated for a maximum of 2 hours.) Prerequisite: senior standing.

(GR) Greek Courses

GR 201 Beginning Greek (4). Fundamentals of the Greek language. (Alt F)

GR 202 Continuation of Beginning Greek (4). Continuation of GR 201. Fundamentals of the Greek language together with simple passages from the Greek New Testament. Prerequisite: GR 201. (Alt S)

GR 268 Workshop in Greek (1–3). As announced. (May be repeated for a maximum of 6 hours.)

GR 293 Topics in Greek (1–3). As announced. (May be repeated for credit.)

GR 301 Intermediate Greek (3). The Greek language with reference to John's Gospel and Matthew. Prerequisite: GR 202. (Alt F)

GR 302 Continuation of Intermediate Greek (3). Continuation of GR 301. The Greek language with reference to Paul's writings. Prerequisite: GR 301. (Alt S)

GR/REL 423 Advanced Greek Translation and Exegesis (2). Selected passages from the New Testament and other Greek writings.

GR/REL 424 Advanced Greek Translation and Exegesis (2). As announced. Continuation of GR 423.

GR 468 Workshop in Greek (1–3). As announced. (May be repeated for a maximum of 6 hours.)

GR 491 Directed Study (1–3). Independent study. (May be repeated for a maximum of 4 hours.)

GR 493 Topics in Greek (1–3). As announced. (May be repeated for credit.)