**GEOLOGY (GEOL)**

**Courses**

**GEOL 201. Advanced Field Geology. 3 Credits.**
Advanced field mapping techniques, analysis of field data, preparation of geological maps and reports. Prerequisite: GEOL 101.

**GEOL 231. Petrology. 4 Credits.**
The course covers the scope and methods of igneous, sedimentary and metamorphic petrology, and the geologic environments and processes relevant to the major rock types. Prerequisite: GEOL 110.

**GEOL 234. Global Biogeochemical Cycles. 3 Credits.**
Integrated perspective on biogeochemical cycles describing the transformation and movement of chemical substances in the natural environment, as seen on the global context. Prerequisite: CHEM 031.

**GEOL 235. Geochemistry of Natural Waters. 3 Credits.**
Basic concepts of chemical equilibria applied to natural waters, including thermodynamics, pH, oxidation-reduction, weathering, and solution equilibria. Prerequisite: Prerequisite: CHEM 032.

**GEOL 240. Tectonics. 3 Credits.**
Applications of igneous and metamorphic petrology to problems in tectonophysics, including petrochemistry of the earth's crust and upper mantle and the internal structure of orogenic belts. Prerequisites: GEOL 101, GEOL 110.

**GEOL 246. X-ray Diffractometry. 3 Credits.**
This course focuses on identification and characterization of materials using X-ray diffractometry. The course will include exercises using a modern powder diffractometer. Prerequisite: GEOL 110.

**GEOL 249. Crystal Chemistry. 3 Credits.**
A hands-on course involving crystal structure solutions, wherein grading will be based on various class projects, not examinations. Students will gain a deep understanding of how Nature arranges matter on Earth, and how to determine the atomic arrangement of compounds using X-ray diffractometry. Prerequisites: GEOL 110 or GEOL 246; or Chemistry, Physics, or Material Science major and minimum Junior standing; or graduate standing in Chemistry, Physics, or Material Science.

**GEOL 260. Structural Geology. 0 or 4 Credits.**
Examines processes and problems concerning the mechanical behavior of the Earth's crust and surface. Includes rock deformation stress, strain, and the interpretation of geological structures. Prerequisites: GEOL 101, GEOL 110.

**GEOL 263. Geochronology. 3 Credits.**
This course will survey the basic concepts of radioactive decay, mass spectrometry, and isotopic systems commonly used to quantify the timing of geologic events. Prerequisite: GEOL 110.

**GEOL 302. Intro Graduate Studies Geology. 1 Credit.**
For first year graduate students in Geology. Includes orientation to faculty, abstract and grant writing, comprehensive exams, talk preparation and scientific method in the Geosciences. Prerequisite: Graduate standing in Geology.

**GEOL 352. Environmental Geology Seminar. 1-3 Credits.**
Geologic constraints on environmental problems including: groundwater flow, contaminant transport, slope stability, climate change, sedimentation, deforestation and earthquake hazards. Extensive readings and student-led discussions. Prerequisite: Graduate standing in science, natural resources, or engineering.

**GEOL 355. Critical Writing in Science. 3 Credits.**
Learn how to write better papers, give exciting presentations, and do peer-reviews. Write and review abstracts, articles, and professional presentations. Refine public science communication techniques including radio interviews and pitching work to the media. Takes a hands-on approach to improving science communication. Prerequisite: Graduate Student standing in science, mathematics, natural resources, agriculture and life sciences, plant and soil science, or engineering, or undergraduate thesis writers in these fields by Instructor permission.

**GEOL 361. Advanced Structural Geology. 3 Credits.**
Selected topics in analytical structural geology. Prerequisite: GEOL 260.

**GEOL 371. Advanced Readings. 1-3 Credits.**
Readings and research problems intended to contribute to the program of graduate students in areas of geology for which formal courses are not available. Topics vary by offering; periodic offering at intervals that may exceed four years. Prerequisite: Graduate standing in Geology.

**GEOL 390. Internship. 1-18 Credits.**
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

**GEOL 391. Master's Thesis Research. 1-9 Credits.**
Master's Thesis Research.

**GEOL 392. Independent Study. 1-18 Credits.**
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

**GEOL 394. Independent Graduate Research. 1-18 Credits.**
Graduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

**GEOL 396. Special Topics. 1-18 Credits.**
See Schedule of Courses for specific titles.

**GEOL 397. Teaching Assistantship. 1-3 Credits.**
Student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.