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 217. Vermont Field Geology. 4 Credits.
Field observations of rocks and surficial materials across northern Vermont are utilized to decipher the region's geologic history. Readings complement field work. Prerequisite: Graduate student standing.

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 233. Environmental Isotope Geochem. 3 Credits.
Course focuses on stable isotope geochemistry of low temperature processes occurring on and near the earth surface through lecture, laboratory, and seminar. Prerequisite: CHEM 031.

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: CHEM 032.

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 265. Geomicrobiology. 3 Credits.
An introduction to microbial control of redox chemistry on Earth's surface, including field techniques and a detailed look at how microbes affect element cycling. Prerequisite: GEOL 135.

GEOL 266. Microstructures. 3 Credits.
This course will focus on deformation of rocks and minerals at the microscopic scale and the practical use of photographic analyses to unravel tectonic histories. Prerequisite: GEOL 260.

GEOL 273. Geology of the Appalachians. 3 Credits.
Origin of mountain belts; the Appalachian mountain system discussed in terms of tectonics and geologic processes active in modern continental margins. Prerequisites: GEOL 101, GEOL 110.

GEOL 295. Advanced Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

GEOL 296. Advanced Special Topics. 1-18 Credits.
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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 335. Aqueous Environmental Geochem. 3 Credits.
This course focuses on the chemical equilibrium and kinetics principles governing water chemistry, including water interaction with the atmosphere, microbes and minerals. Prerequisite: Graduate standing.

GEOL 351. Surface Proc & Quaternary Geol. 1-3 Credits.
Discussion and critique of scientific literature pertaining to Earth surface history and processes. Critical examination of author's methods, data, and assumptions. Student-led discussions. Specific focus changes yearly. Prerequisite: Graduate standing in science, natural resources or engineering.

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 360. Structural Anyl Deformed Rocks. 4 Credits.
Mechanisms of rock deformation; fracture phenomena and analysis; fault zone characteristics; fold generation analysis. Stress and strain interpretation of deformational features in rocks and minerals. Field work. Prerequisite: GEOL 260.
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. Prerequisite: Graduate standing in Geology.

GEOL 384. Teaching in the Geosciences. 1 Credit.
A review of the pedagogical underpinnings of introductory geology and its laboratory activities.

GEOL 385. Teaching in the Geosciences. 1 Credit.
A review of the pedagogical underpinnings of introductory geology and its laboratory activities.

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