

Geology

Bevis, Van Iten, Worcester.

Major: Geology courses: one of a 16X; 220, 361; either 461 or 471 (culminating experience); any five additional courses. Students must complete at least one field course (233 or 237) or a field-based Special Topics (360) course, Directed Study (370), or Senior thesis (471) approved by the department.

Cognate courses: three courses including Che 161; either Ast 166, Phy 161, or any college-level, laboratory-based biology course; and either Mat 112, Mat 121 or Mat 217.

Comprehensive evaluation, with grade of C- or higher. Total of 8.25 major courses, plus 3 cognates = 11.25.

Recommended: CS 110; Mat 122.

Minor: Geology courses: one of a 16X; any five others. Total of 6 minor courses.

Geo 160. Special Topics.

Geo 161. Physical Geology. Introduction to the physical earth; its nature, structure, and the processes that shape it. Laboratory: minerals, rocks, topographic and geologic maps, aerial photographs. Partially satisfies Natural World LADR. Not open to students with prior credit a 16X course.

Geo 162. Geology of National Parks and Monuments. An investigation of geological features, processes, and history through a study of selected national parks and monuments in the United States. Laboratories emphasize hands-on learning through the classification of minerals, rocks, and fossils; the interpretation of topographic and geologic maps and remotely-sensed imagery; and will culminate with an extended field trip to describe and interpret the geology of one or more national parks and/or monuments. Not open to students with prior credit in a 16X course. Partially satisfies the Natural World LADR. Offered Spring Term alternate years. Prerequisite: permission of instructor.

Geo 163. Environmental Geology. Examines how the earth affects humans and how humans affect the earth. Partially satisfies Natural World LADR. Not open to students with prior credit in a 16X course.

Geo 220. Mineralogy. Description, identification, and classification of naturally occurring crystalline solids. Includes crystallography and crystal chemistry. Application of crystallography and crystal chemistry to an understanding of the occurrence, origin, and physical characteristics of minerals. Laboratory: symmetry, stereograms, structure analysis, mineral identification. Prerequisite: a 16X course. Offered Fall Term.

Geo 221. Introduction to Geographic Information Science. Lectures will introduce fundamental concepts of spatial data, data management, data analysis, modeling, map design and map projections and coordinate systems. A series of laboratory case studies will present real-world applications of GIScience while offering students opportunities to apply the fundamental concepts discussed in lectures. A working knowledge of computers is necessary.

Geo 233. Historical Geology. A survey of earth history throughout geologic time with emphasis on the development of North America. Laboratory: fossils, geologic maps, cross-sections, field trips. Prerequisite: a 16X course and consent of instructor. Offered Spring Term alternate years.

Geo 237. Field Study. Geologic principles, processes, and features as seen on field trips to selected areas of geologic interest. Geologic mapping, aerial photograph interpretation, description and interpretation of stratigraphy and geologic structures. Designed for majors and non-majors.

Prerequisites: a 16X course and consent of instructor. Offered Spring Term alternate years.

Geo 241. Introduction to Meteorology. An introduction to the physical laws that control the structure and movement of the atmosphere and its interaction with the surface of the earth, weather prediction, climate, air pollution. Does not apply toward major. Offered Winter Term alternate years.

Geo 260. Special Topics.

Geo 261. Issues in Environmental Geology. An in-depth examination of special topics in environmental geology such as natural hazards, pollution, water, energy or mineral resources. Will analyze real cases in the chosen topic. Labs. Field trips. May be team-taught. Offered Spring Term. Partially satisfies the Natural World LADR. Not open to students with prior credit in Geo 163.

Geo 262. History of Life. Introduction to the scientific study of fossils (paleontology) and survey of major developments in the co-evolution of life and the physical environment. Laboratory exercises emphasize the identification and illustration of fossil specimens, mainly invertebrates, and the interpretation of their morphology. Field trips to local fossil collecting localities. Partially satisfies Natural World LADR. Introductory biology or physical geology recommended.

Geo 307. Directed Study. .50 unit.

Geo 322. Igneous and Metamorphic Petrology. The description, identification, and classification of igneous and metamorphic rocks. The origins and occurrences of igneous and metamorphic rocks. Laboratory: hand-specimen and thin-section study of igneous and metamorphic rocks. Prerequisite: 220. Offered Winter Term alternate years.

Geo 323. Structural Geology. A study of the mechanical behavior of earth materials. Description, identification, and mechanical analysis of folds, faults and other geologic structures. Laboratory: geometric analysis of structures. Prerequisite: a 16X course. Offered Winter Term alternate years.

Geo 327. Sedimentary Deposits. The study, classification, and interpretation of ancient and modern sediments and sedimentary rock sequences. Laboratory: handspecimen and thin-section study of sedimentary rocks, mechanical and compositional analysis of sediments, and preparation of stratigraphic maps. Field study of modern sediments and sedimentary rocks. Prerequisite: a Geo 220 course and permission of the instructor. Offered Winter Term alternate years.

Geo 328. Physical Hydrogeology. Introduction to groundwater chemistry and the physical principles governing groundwater flow. Integration of geomorphic, stratigraphic, geochemical, and hydraulic data concepts in building mathematical models of groundwater systems. Heavy emphasis on analysis of numerical problems and, in laboratory, use of physical and computer models. Prerequisite: a Geo 16X3 course and permission of the instructor. Offered Fall Term.

Geo 334. Geomorphology. The study of the forces and processes that shape the earth's surface as a means of understanding how the earth's features develop. Laboratory: interpretation and analysis of the earth's surficial features as seen on maps and photographs, field trips. Prerequisite: a 16X course. Offered Fall Term alternate years.

Geo 357. Internship. Off-campus supervised experience in Geology.

Geo 360. Special Topics.

Geo 361. Research Methods. The detailed study of a specific topic in geology through a search of the literature and a review of current research in the area. Prerequisite: a Geo 220 course. Offered Winter Term. 0.25 unit.

Geo 370. Directed Study.

Geo 457. Internship. Off-campus supervised field experience in geology. Prerequisite: Permission of instructor.

Geo 461. Senior Seminar.

Geo 465. Capstone Seminar. Course content will reflect the topic for the annual Capstone. Open to all juniors and seniors and may be repeated once for credit. Students may enroll in only one Capstone seminar in a given term.

Geo 471. Senior thesis. Prerequisite: 361.

Geo 499. Comprehensive Evaluation.