

Geology

Bevis, Van Iten, Worcester.

Major: Geology courses: one of 163, 164, 165, or 166; 220; either 461 or 471 (culminating experience); any five others including at least one field course (233, 237, 360) or a field-based independent study approved by the department.

Cognate courses: Che 161 or 164; Ast 166, Phy 115, or a biology course; Mat 112, Mat 121 or Mat 217.

Comprehensive evaluation, with grade of C- or higher. Total of 8 major courses, plus 3 cognates = 11.

Recommended: CA 121; Mat 122.

Minor: Geology courses: one of 163, 164 or 166; any five others. Total of 6 minor courses.

Geo 160. Special Topics.

Geo 161. Introduction to 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. In combination with Phy 161, satisfies Natural World LADR or GDR III.A. Not open to students with prior credit in Geo 111 or other Geo 16X courses.

Geo 163. Environmental Geology. Examines how the earth affects humans and how humans affect the earth. In combination with Bio 163, satisfies Natural World LADR and General Degree Requirement III.A. Not open to students with prior credit in Geo 111, 164, 165, 166 or 236.

Geo 164. Physical Geology. Introduction to the earth system: a detailed survey into the nature of its components and their interactions, including its composition, its internal structure and external features, and its formational processes. Laboratories emphasize hands-on learning through the study and classification of minerals, rocks, and fossils; interpretation of topographic and geologic maps, aerial photographs, field trips. In combination with Che 164, satisfies Natural World LADR and General Degree Requirement III.A. Not open to students with prior credit in Geo 111, 163, 165, 166, 236; Che 161 or equivalent, or NW 112.

Geo 165. Global Environmental Change. Introduction to the influence of human civilization on Earth's environmental systems: describes the natural components of these systems and their interactions, places humans within these systems, details the affects of human activity, and suggests alternative human practices that lessen the severity of their impacts. Laboratories emphasize practical, project-based experience. In combination with Ast 165, satisfies Natural World LADR and General Degree Requirement III.A. Not open to students with prior credit in Geo 111, 163, 164, 166, or 236.

Geo 166. Introduction to Planet Earth. Replaces NW 112. Explores how geologists and other thinkers have applied mathematics, physics, astronomy, and chemistry to interpret the shape, size and mass distribution, internal structure and composition, thermal and magnetic dynamics, and history of our planet. In combination with Ast 166 satisfies Natural World LADR and General Degree Requirement III.A.

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: 111 or a 16X course. Offered Fall Term. Partially satisfies General Degree Requirement III.A.

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: 111 or a 16X course and consent of instructor. Partially satisfies General Degree Requirement III.A. Offered Spring Term alternate years.

Geo 234. 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. Prerequisite: 111 or a 16X course. Partially satisfies General Degree Requirement III.A.

Geo 236. Environmental Geology. Geologic principles and processes applied to man and his physical environment. Natural resources, geologic hazards, waste disposal and land-use planning. Emphasis on field trips and laboratory study. Prerequisite: 111 or a 16X course. Partially satisfies General Degree Requirement III.A.

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: 111 or a 16X course and consent of instructor. Offered Spring Term alternate years. Partially satisfies General Degree Requirement III.A.

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. Partially satisfies General Degree Requirement III.A.

Geo 242. Geology of National Parks and Monuments. A study of the natural features and geological history of selected national parks and monuments in the United States. Laboratory: rocks, minerals, fossils, topographic and geologic maps. Not open to students with credit in 111 or a 16X course. Prerequisite: Completion of sequence requirement GDR III.A. Offered on demand.

Geo 260. Special Topics.

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: 111 or a 16X course. Offered Winter Term alternate years. Partially satisfies General Degree Requirement III.A.

Geo 327. Sedimentary Deposits. The study, classification, and interpretation of ancient and modern sediments and sedimentary rock sequences. Laboratory: hand-specimen 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: 220. 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: 236. Offered Fall Term.

Geo 329. Contaminant Hydrogeology. Applications of the principles of physical and chemical hydrogeology to the protection of groundwater and remediation of polluted groundwater. Contaminant transport models and remediation engineering with heavy emphasis on analysis of

numerical problems and, in laboratory, use of physical and computer models. Prerequisites: Geo 328; Mat 121 strongly recommended. Offered on demand.

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: 111 or a 16X course. Offered Fall Term alternate years. Partially satisfies General Degree Requirement III.A.

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: 220. Offered Winter Term. 0.25 unit.

Geo 370. Directed Study. One unit.

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

Geo 461. Senior Seminar.

Geo 471. Independent Study. Prerequisite: 361.