GEOL 001. Earth System Science. 0 or 4 Credits.
An introduction to the earth as a closed system, the cycling of materials and energy within it, and how it interacts with the hydrosphere and atmosphere. May not be taken for credit concurrently with, or following receipt of, credit for GEOL 002.

GEOL 002. Earth System Science. 3 Credits.
An introduction to earth as a closed system, the cycling of materials and energy within it, and how it interacts with hydrosphere and atmosphere. No Lab. May not be taken for credit concurrently with, or following receipt of, credit for GEOL 001.

GEOL 003. Fire & Ice. 3 Credits.
Introduction to volcanoes/plate tectonics ("fire") and glaciers/ climate change ("ice") using lectures, slides, discussion, and field trips. Considers Vermont and world-wide geological examples.

GEOL 005. Mt - Lake:Geol Lake Chmplt Bsn. 4 Credits.
Scientific principles applied to the geology and geologic history of the Lake Champlain Basin.

GEOL 007. SU: Earth Hazards. 0 or 3 Credits.
Understand geological and societal causes of death and destruction by earthquakes, landslides, floods, volcanoes, storms, and avalanches around the world.

GEOL 008. The Dynamic Earth. 3 Credits.
Exploration of Earth from a systems perspective, the exchange of mass and energy with the atmosphere, hydrosphere and lithosphere. How geologists use the scientific method. Credit not given for both GEOL 008 and either GEOL 005 or GEOL 001.

GEOL 010. Geological Oceanography. 0 or 3 Credits.
Characteristics and development of the oceans, their basins and shorelines, including plate tectonic history and basic physical, chemical, and biological processes. Prerequisite: GEOL 001.

GEOL 025. Environmental Geology Survey. 3 Credits.
Environmental Geology is the study of the interactive relationship between humans and their geologic environment. No lab.

GEOL 053. Planetary Geology. 3 Credits.
Characterizes the differences and similarities between the Terrestrial and Jovian Planets, the dynamic processes that shape our home planet and compares the geologic processes active in our Solar System. Prerequisite: ASTR 005.

GEOL 055. Environmental Geology. 0 or 4 Credits.
Introduction to geologic processes and materials pertinent to environmental problems: ground water movement, supply, and contamination, waste disposal, flooding, subsidence, and landslides. Local field trips. Designed for intended natural science majors.

GEOL 062. Earth Env & Life Through Time. 0 or 4 Credits.
This course presents an overview of how the Earth has changed over time and how this has influenced the history of life. Prerequisites: GEOL 001, GEOL 005, or GEOL 055.
GEOL 190. Internship. 1-18 Credits.
An 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 191. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.

GEOL 195. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

GEOL 196. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

GEOL 197. 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 198. Undergraduate Research. 1-18 Credits.
Undergraduate 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 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. 3 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: 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 242. Basin Analysis. 3 Credits.
This course examines the formation and evolution of sedimentary basins, including tectonic setting, sediment supply, and subsidence history. Prerequisite: GEOL 153.

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 261. Geodynamics. 4 Credits.
Examines physical evolution of the Earth on regional to global scale. Project oriented, focusing on analysis and interpretation of geologic and geophysical data. 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 272. Regional Geology. 0 or 4 Credits.
Discussion of the geology of a selected region of North America; a four-week summer field trip to the area in question. Prerequisites: GEOL 101, GEOL 110.

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 290. Internship. 1-18 Credits.
An 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 291. Seminar in Geology. 1 Credit.
Seminar on current topics in the geosciences, including attendance at weekly departmental visiting speaker series, reading and analysis of related scholarly publications, oral/written reports.

GEOL 292. Senior Seminar. 1 Credit.
Seminar on current topics in the geosciences, including attendance at weekly departmental visiting speaker series, reading and analysis of related scholarly publications, oral/written reports.

GEOL 293. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.

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

GEOL 296. Advanced Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

GEOL 297. 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 298. Undergraduate Research. 1-18 Credits.
Undergraduate 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.