EES 3. Geology Field Trip (1; max total 3)
Extended weekend field trip to areas of geologic interest including Yosemite National Park, Death Valley, or coastal California. May be repeated. Nonmajors encouraged. ***CR/NC*** grading only. (Weekend field trips required; field trip fee, $60) (Formerly GEOL 3)

EES 4. Environmental Science (4)
Prerequisite G.E. Foundation B4. Introduction to environmental science, focusing on environmental principles and processes. Topics include human population and consumption, ecosystems and biodiversity, resource management and conservation, energy sources and technology use, dynamics, ecosystems, pollution and wastes, environmental economics and ethics, global changes, and tomorrow's world. (3 lecture, 2 lab hours) G.E. Breadth B1. (Formerly ENSC 1)

EES 9. Introduction to Earth Science (3)
Introduction to earth science emphasizing K-6 teacher preparation. Addresses topics in earthquakes, volcanoes, rock and mineral formation, oceanography, astronomy, and meteorology. For liberal studies majors only. (2 lecture, 2 lab hours) (Formerly GEOL 9)

EES 12. Mineralogy (3)
Prerequisites: EES 1; CHEM 1A (or concurrently). Prerequisite: high school chemistry. Properties, relationships, uses origin of minerals; determination of common minerals by physical and other tests. Field trips may be required. (2 lecture, 3 lab hours) **F** (Formerly GEOL 12)

EES 30. Introductory Field Methods (2)
Prerequisites: EES 1, MATH 5. Introduction to geologic fieldwork methods, including use of Brunton pocket transit and stereo aerial photographs, preparation/interpretation of maps and geologic cross-sections. ***CR/NC*** grading. Graded for EES majors/minors. (6 lab/field hours) (Weekend field trips required) (Formerly GEOL 30)

EES 50. National Parks of the Sierra Nevada (3)
Geology, ecology, and history (human and natural) of Yosemite, Kings Canyon, and Sequoia National parks and issues facing these parks. (3 lecture hours, field exercises required)

EES 100. Analytical Methods in the Earth Sciences (2)
Prerequisites: EES 12 (concurrent enrollment recommended). Covers various methods for identifying and characterizing crystalline substances. Topics include crystallography, optical methods for mineral identification, and powder X-ray diffraction methods for mineral identification and structure characterization. (1 lecture, 3 lab hours) **F** (Formerly GEOL 100)

EES 100A. Soil and Water Sciences (4)
Prerequisite: BIOL 1A, CHEM 1B or CHEM 150, EES 1 or EES 4, PHYS 4B or 2B, MATH 75. Introduction to the physical, chemical, and biological properties of soil and water in relation to environmental sustainability. Introduction to the hydrological cycle and distribution of soil and water sources. Discussion of soil and water resources management and policy issues. (3 lecture, 3 lab hours; optional field trips) (Formerly ENSC 100A)

EES 100B. Atmospheric Science (3)
Prerequisite: BIOL 1A, CHEM 1B or CHEM 150, EES 1 or EES 4, PHYS 4B or 2B, MATH 75. The structure of the atmosphere and humanity's impact upon it. The causes and consequences of air pollution. Air quality standards. Stratospheric and tropospheric ozone. Introduction to the chemistry of air pollution and air pollution control strategies. (2 lecture, 3 lab hours; optional field trips) (Formerly ENSC 100B)

EES 101. Igneous and Metamorphic Petrology (4)
Prerequisites: EES 30, 100; CHEM 1B (or concurrently). Origin classification, textures, structures, and geologic setting of igneous and metamorphic rocks; examination of samples in outcrop, hand specimen, and thin section. Weekend field trips required. (3 lecture, 3 lab hours) **S** (Formerly GEOL 101)

EES 102. Sedimentology (4)
Prerequisites: EES 30, 100, 101. Origin, classifications, textures, and structures of sedimentary rocks; examination of samples in hand specimen and thin section. Required field component for field stratigraphy and sedimentology and for producing a formal field report. (2 lecture, 3 lab hours plus field project) **F** (Formerly GEOL 102)

EES 104. Scientific Writing and Research Techniques (2)
Prerequisites: EES 1 or EES 4; a passing grade on the Upper-Division Writing Exam, or completion of an upper-division writing course with a ***C*** or higher (may be taken concurrently). Organizing and writing the scientific report and thesis. Topics include techniques and conventions in research methods, evaluation approaches, and presentation of results. Peer reviews. Oral presentation and term paper required. (1 lecture, 3 lab hours) **F** (Formerly GEOL 104)

EES 105. Geomorphology (3)
Prerequisite: EES 1; EES 30 (or concurrently). Landforms, climates, geologic processes, and their interrelation in shaping the earth's surface today and in the geologic past. Interpretation of topographic maps and aerial photographs. Field trips required. (2 lecture, 3 lab hours) (Formerly GEOL 105)

EES 106. Structural Geology (4)
Prerequisites: EES 30, 101; MATH 75 (or concurrently); PHYS 2A. Recognition, representation, and interpretation of structural features of the earth's crust. Includes theoretical and mechanical principles. Study of regional tectonics and major structural provinces of the Cordillera. Required field component for field mapping, collecting, and producing formal field report. Field trips required. (2 lecture, 3 lab hours plus field project) **F** (Formerly GEOL 106)

EES 107. Advanced Field Methods (3)
Prerequisites: EES 102, 104, 106. Field trips to areas of diverse geology; observation, description, and mapping of geologic phenomena. Includes written reports of areas selected for study. Students should contact the department for details. (9 lab hours usually including fieldwork on weekends or during January intercession and spring vacation) **S** (Formerly GEOL 107)

EES 110. Invertebrate Paleontology (3)
Prerequisites: EES 1 or BIOL 1A and 1B, or BIOL 12, and BIOL 11. Invertebrate structures and development of prehistoric animals; introduction to stratigraphic importance of fossils. Field trips may be required. (2 lecture, 3 lab hours) (Formerly GEOL 110)

EES 112. Planet Earth through Time (3)
Credit not allowed after completion of EES 2. Prerequisites: G.E. Foundation and Breadth Area B. Principles of geology used in the interpretation of the history of Earth as revealed in rocks and their fossils.