Geology Courses

GEOL 1110 Physical Geology (4 credits)
Physical geology is the study of the Earth system, minerals, rocks, the processes that operate upon Earth, the landforms that originate from them. Natural hazards and mineral resources are also studied. The course will demonstrate that the planet is a completely integrated, continually evolving and dynamic system. The course is also aimed to create an awareness of how it affects our life and our responsibility to the planet and its future. Lecture and laboratory. [Core Curriculum Goal Area(s) 3 & 10 (LC)]

GEOL 1120 Intro to Fossils and History of Planet Earth (4 credits)
The course focuses on the study of fossils and the application of fundamental geologic principles to decipher Earth's history: understanding Earth materials and processes, fossils identification and classification, geologic time, and the conditions that led to the major events (extinctions, diversifications, and environmental transitions) in the history of life. Lecture and laboratory. [Core Curriculum Goal Area 3 (LC)]

GEOL 2110 Crystals, Minerals and Rocks (4 credits)
The course provides understanding of how crystals and crystalline structures are formed, as well as minerals and igneous and metamorphic rocks. It includes learning to use tools and diagnostic tests for identification of minerals in hand samples and in the polarizing microscope and other instruments. The course also includes the study of the genesis, classification, and identification of igneous, and metamorphic rocks. Finally, the potential of a region to produce mineral resources is discussed. Lecture and laboratory. [Core Curriculum Goal Area 3 (LC)]

GEOL 2730 Introduction to Planetary Science (4 credits)
An introduction to the solar system and its components. The course includes a discussion of missions, devices, and technologies for its exploration. It also involves the study of star evolution, laws, and principles for movement of celestial objects: planets, satellites, asteroids, comets, and meteorites. Analysis of physical characteristics and geological features of planets and moons of the solar system. Introduction to exoplanets and the search for life. Finally, a discussion of the solar system evolution, Planet Earth's future and human influence is included. Lecture and laboratory. [Core Curriculum Goal Area 3 (LC)]

GEOL 2925 People of the Environment: Earth Science Perspective (3 credits)
Application of the Earth Sciences in understanding the causes of, and solutions to, environmental problems. Environmental perspectives on geologic hazards.

GEOL 3120 Soils (4 credits)
Introduction to principles of soil genesis, classification, physical and chemical properties, and biological significance. Lecture and laboratory. Prerequisites: (BIOL 1400 or BIOL 1120) and (GEOL 1110 or BIOL 1500) or consent of instructor. May not be offered every year.

GEOL 3211 Environmental Hydrology (3 credits)
The course provides a basic understanding of the principles and processes governing the movement of water through the hydrologic cycle, including atmospheric moisture flow, surface runoff, infiltration, and groundwater flow. Environmentally relevant applications based on case studies will be studied. The course include coverage of contemporary global issues related to water resources, sustainable development, and climate change. Prerequisites: GEOL 1110 and MATH 1170 or equivalent, or consent of instructor.

GEOL 3212 Hydrogeology (3 credits)
Groundwater flow to wells, aquifer test analysis, groundwater exploration techniques, application of computer models in groundwater studies, hydrogeologic field methods, contaminant hydrogeology, vadoze zone hydrology. Lecture and laboratory. Prerequisites: GEOL 3211 or consent of instructor. May not be offered every year.

GEOL 3400 Glacial and Pleistocene Geology (3 credits)
Modern concepts of glaciology and glacial geology. Interpretation of the phenomena and effects on the landscape. Lecture and laboratory. Prerequisite: GEOL 1110 or consent of instructor.

GEOL 3500 Topics in Paleontology (3 credits)
Introduction to major groups of organisms that are commonly preserved as fossils. Focus of class may vary between offerings; including invertebrate and vertebrate paleontology, introductory micropaleontology, palynology and pollen analysis. May be repeated as topics change. Lecture and laboratory. Prerequisite: GEOL 1120. (May not be offered every year.)

GEOL 3600 Stratigraphy and Sedimentation (3 credits)
Study of sedimentary rocks. Recognition of the physical and biologic factors affecting deposition. Introduction to stratigraphic principles. Lecture and laboratory. Prerequisites: GEOL 1110 or GEOL 1120, and GEOL 2110.

GEOL 3700 Environmental Geophysics (3 credits)
Introduction to geophysical processes and geophysical field methods commonly used in environmental evaluation. Interdisciplinary approach to an understanding of the physical environment. Lecture and laboratory. (Might not be offered every year.)

GEOL 4300 Global Environmental Change (3 credits)
This class offers an interdisciplinary introduction to the principles of climate, ecosystems, and biogeochemistry needed to understand human impacts on the natural environment. We will also discuss global change prediction and the scientific bases for global change assessments and policy measures. Key topics are the physical climate system and its variability, the carbon cycle and related biogeochemistry and ecosystem processes, land use issues, the interactions among climate, ecosystems, and biogeochemistry, and the impact of global change on societally relevant parameters. Common threads in all of these topics will pervade the whole semester; these include the use of observations and models, the consideration of multiple scales of change (temporal and spatial), the interaction of human behaviors and choices with natural systems, and the linkages among aspects of global change science (may not be offered every year). Prerequisites: ENVR 2000 or GEOG 2100 or Consent of Instructor.

GEOL 4910 Directed Independent Study (3 credits)
Arranged individual study.

GEOL 4917 DIS Tchg Assoc | (1-2 credits)
Directed Independent Study | Teaching Associate

GEOL 4970 Internship (3 credits)
Graded Satisfactory/Unsatisfactory only. Student internships may be either full-time or part-time in a public or private agency appropriate to the degree objective. Internships consist of closely supervised periods of service that are arranged in advance of the course registration. Students should consult their advisor concerning prerequisites.

GEOL 4980 Research (3 credits)
Research carried out by the student that is based on appropriate methodology and scholarship.

All-University Courses

The course numbers listed below, not always included in the semester class schedule, may be registered for by consent of the advisor, instructor, or department chair, or may be assigned by the department when warranted. Individual registration requires previous arrangement by the student and the completion of any required form or planning outline as well as any prerequisites.

1910, 2910, 3910, 4910 DIRECTED INDEPENDENT STUDY
1920, 2920, 3920, 4920 DIRECTED GROUP STUDY
1930, 2930, 3930, 4930 EXPERIMENTAL COURSE
1940, 2940, 3940, 4940 IN-SERVICE COURSE
1950, 2950, 3950, 4950 WORKSHOP, INSTITUTE, TOUR
1960, 2960, 3960, 4960 SPECIAL PURPOSE INSTRUCTION
1970, 2970, 3970, 4970 INTERNSHIP
1980, 2980, 3980, 4980 RESEARCH
1990, 2990, 3990, 4990 THESIS