COURSES FOR GEOLOGY

Geological Sciences Courses

GEO101 The Dynamic Earth

Hours 4
Three lectures and one laboratory. Study of the earth including materials, internal and external processes, deformational events, and plate tectonics. Offered in the fall, spring, and summer semesters.

Natural Science

GEO102 The Earth Through Time

Hours 4
Three lectures and one laboratory. Survey of earth’s history including origin of the earth, plate tectonics and evolution of the continents and ocean basins, and the development of life. Offered in the fall, spring, and summer semesters.

Natural Science

GEO103 Introduction to Oceanography

Hours 4
This course is an introductory study of the Earth Ocean system, including processes shaping the ocean floor and coastlines; basic physical and chemical properties of the seawater; ocean circulation and climate change, and biological productivity and marine life.

Prerequisite(s): None
Prerequisite(s) with concurrency: None

Natural Science

GEO104 Hazardous Earth

Hours 4
This natural science course examines geologic and other Earth hazards that impact humans and ways that human activities often increase these hazards. The course consists of lecture and lab, and includes field trips and videos that illustrate various natural hazards.

Natural Science

GEO105 Sustainable Earth

Hours 4
Three lectures and one laboratory. Lecture and laboratory provide an understanding of important earth resources (rocks and minerals, soil, water, fossil fuels, alternative energy) and how their utilization by humans impacts the environment. Includes discussion of water pollution, air pollution and waste disposal as primary issues related to resource utilization.

Natural Science

GEO205 Communicating Geology

Hours 3
No description available

GEO210 Mineralogy

Hours 4
Two lectures and two laboratories. Introduction to crystallography, crystal chemistry, rock-forming minerals, physical properties of minerals, hand sample mineral identification, and optical mineralogy. Offered in the fall semester.

Prerequisite(s): CH 101 or CH 117; and GEO 101

GEO306 Hydrogeology

Hours 3
Introduction to the principles of groundwater flow, groundwater exploration, water quality, and groundwater contamination; environmental topics in groundwater. Offered in the fall semester.

Prerequisite(s): GEO 101

GEO314 Igneous & Meta. Petrology

Hours 4
Three lectures and one laboratory. Megascopic and microscopic study of igneous and metamorphic rocks, with emphasis on identification, classification, genesis, and relationships to tectonism. Offered in the spring semester.

Prerequisite(s): GEO 210

GEO355 Invertebrate Paleontology

Hours 3
Two lectures and one laboratory. Study of the taxonomy and morphology of major invertebrate fossil groups. Offered in the spring semester.

Prerequisite(s): GEO 101 and GEO 102

GEO363 Geomorphology

Hours 3
Two lectures and one laboratory. Study of landforms with emphasis on the basic geomorphic processes that contribute to their origin. Offered in the fall semester.

Prerequisite(s): GEO 101

GEO365 Structural Geology

Hours 3
Two lectures and one laboratory. An introductory study of the deformation of rocks, including mechanical principles, description and identification of folds and faults, map interpretation, and regional tectonics. Offered in the fall semester.

Prerequisite(s): GEO 101 and PH 101
GEO367 Sedimentology/Stratigraphy
Hours 4
Three lectures and one laboratory. Study of the principles involved in the description and classification of sedimentary rocks and stratigraphic units, with emphasis on sedimentary processes and depositional environments. Offered in the spring semester.
Prerequisite(s): GEO 102 and GEO 210

GEO369 Introduction Geophysics
Hours 3
Introduction to the major fields of exploration geophysics such as seismology, isostasy, heat flow, gravity and magnetic prospecting, and electrical methods. The course includes both principles and applications to petroleum, mining, and environmental problems. Offered in the fall semester.
Prerequisite(s): MATH 125 and PH 102 and GEO 101

GEO399 Undergraduate Research
Hours 1-6
A maximum of 4 hours can be applied toward the major in geology. Approval of the department chairperson is required prior to registration. Offered according to demand.

GEO401 Paleoclimatology
W
Hours 3
Survey of the history of global climate change and the methods used to measure paleoclimate in the geological record. Offered in the Spring semester.
Prerequisite(s): GEO 101 or GEO 102

GEO407 Seismology
Hours 3
This course provides an overview of earthquake seismology for both upper-level and graduate geo-science students. Topics include elastic wave propagation, seismic ray theory, travel time interpretations, surface wave dispersion, and seismic tomography.
Prerequisite(s): MATH 126 or MATH 146

GEO410 Soil & Groundwater Restoration
Hours 3
Methods for restoring contaminated soil groundwater by examining the factors and processes influencing the efficacy of remediation systems. Emphasis placed on the scientific principles upon which soil and groundwater remediation is based.
Prerequisite(s): GEO 101 and CH 101 or CH 117 and CH 102 or 118

GEO411 Contaminant Transport in Porous Media
Hours 3
This course will cover topics related to the transport and fate of contaminants in subsurface systems. Specifically, this course will discuss the many factors and processes influencing contaminant transport such as the effects of dispersion, inter-phase mass transfer, transformation reactions, and porous-media heterogeneity. In addition, representative conceptual/mathematical models describing contaminant transport phenomena will be discussed.
Prerequisite(s): MATH 125 PH 102 CH 102 GEO 306

GEO416 Volcanology
W
Hours 3
Study of the physical properties of magmas, eruptive mechanisms, volcanic products, and the relationship between volcanism and tectonism. Writing proficiency within this discipline is required for a passing grade in this course. Offered in the fall semester.
Prerequisite(s): GEO 101 The Dynamic Earth GEO 314 Ign. & Meta. Petrology
Writing

GEO420 Petroleum Geology
Hours 3
Introduction to the origin, migration, accumulation, and entrapment of petroleum. Emphasis is on sedimentary, geochemical, and hydrodynamic processes. Offered in the spring semester of even-numbered years.
Prerequisite(s): GEO 365 and GEO 367

GEO421 Geology & History of W Turkey
Hours 3
This two week long course will emphasize environmental geology history, geoarchaeology, and natural hazards of the Greco-Roman city states in Western Anatolia. It will concentrate on the effects of geology and natural hazards in the decline and eventual fall of these large city states and cultural centers.

GEO424 Topics In Geology
Hours 1-4
Special topics in the following areas: economic geology, geochemistry, geophysics, geomorphology, hydrogeology, mineralogy, paleontology, petrology, sedimentology, stratigraphy, structural geology, and tectonics. Offered according to demand.
Prerequisite(s): GEO 101 The Dynamic Earth / Minimum Grade of C-

GEO430 Ore Deposits
Hours 3
Introduction to sedimentary hydrothermal, metasomatic, and magnetic ore deposits, including geologic setting and genesis. Offered on demand.
Prerequisite(s): GEO 210

GEO435 Honors Sem In Geology
Hours 1
Oral presentations on current geological topics. Offered in the fall semester.

GEO436 Honors Sem In Geology
UH
Hours 1
Oral presentations on current geological topics. Offered in the spring semester.

University Honors

GEO446 Scientific Computing
Hours 3
This course covers a broad range of computational methods used in the geosciences. Topics include data analysis, manipulation and image processing, using a variety of software packages. Offered according to demand.
GEO470 General Geochemistry
W
Hours 3
Overview of the field of geochemistry (elementary chemical equilibria and thermodynamics, organic geochemistry, isotope geochemistry), with an emphasis on solving geologic problems. Offered in the Spring semester.
Prerequisite(s): GEO 314
Writing

GEO476 Analytical Geochemistry
Hours 3
Theory, techniques, and applications of geochemical methods for the analysis of rocks, soils, and aqueous fluids. Offered according to demand.

GEO490 Seminar Regional Geology
Hours 1-3
Seminar on and field trip to important geologic localities. May be repeated for credit. Offered according to demand.
Prerequisite(s) with concurrency: GEO 314

GEO495 Field Geology
Hours 6
Five-week field course involving the application of geologic techniques and principles. Includes geologic mapping, data collection, and report writing. Offered during the first summer term.
Prerequisite(s): GEO 314 and GEO 365 and GEO 367

GEO497 Geological Internships
Hours 3
A maximum of 4 hours can be applied toward the major in Geology. Field and laboratory projects with government and industry. Offered according to demand.
Prerequisite(s): GEO 101 and GEO 102 or GEO 105

GEO499 Research In Geology
Hours 1-4
Offered according to demand.