Geology - GEOL

Courses

GEOL 1100/1103 DYNAMIC EARTH (4) LEC. 3. LAB. 2. Coreq. GEOL 1101. Science Core. General physical geology. Survey of the important minerals and rocks. Origin and classification of geologic structures, earthquakes, and landforms. Study of geologic maps. Credit will not be given for both GEOL 1100 and GEOL 3150.

GEOL 1101 DYNAMIC EARTH LABORATORY (0) LAB. 2. Coreq. GEOL 1100. General physical geology. Survey of the important minerals and rocks. Origin and classification of geologic structures, earthquakes, and land forms study of geologic maps.

GEOL 1107 HONORS DYNAMIC EARTH (4) LEC. 3. LAB. 2. Pr. Honors College or Departmental approval. General physical geology for Honors students and Geology majors. Topics similar to those in GEOL 1110 but covered in greater depth. Science Core.

GEOL 1108 HONORS DYNAMIC EARTH LABORATORY (0) LAB. 2. Pr. Honors College or Departmental approval. General physical geology for Honors students and for Geology majors. Topics similar to those in GEOL 1101 but covered in more depth. Science Core.

GEOL 1110/1113 EARTH AND LIFE THROUGH TIME (4) LEC. 3. LAB. 2. Pr. GEOL 1100 or GEOL 1103 or GEOL 1107. Science Core. Physical and biological history of the Earth, with emphasis on the interaction between life, the atmosphere, rocks, and oceans.

GEOL 1111 EARTH AND LIFE THROUGH TIME LABORATORY (0) LAB. 2. Pr. GEOL 1100 or GEOL 1103 or GEOL 1107. Coreq. GEOL 1110. Examination of rock, fossil, and related data sets bearing on the geological development of the earth with emphasis on North America.

GEOL 1117 HONORS EARTH AND LIFE THROUGH TIME (4) LEC. 3. LAB. 2. Pr. GEOL 1100 or GEOL 1103 or GEOL 1107 or Departmental approval. Physical and biological history of the Earth, with emphasis on the interaction between life, the atmosphere, rocks, and oceans. For Honors students and Geology majors. Science Core.

GEOL 1118 HONORS EARTH AND LIFE THROUGH TIME LABORATORY (0) LAB. 2. Pr. GEOL 1100 or GEOL 1103 or GEOL 1107 or Departmental approval. General historical geology for Honors students and Geology majors. Topics similar to those in GEOL 1111 but covered in greater depth. Science Core.

GEOL 1200 MARINE TECHNICAL METHODS (2) LAB. 8. Departmental approval. Introduction to procedures utilized aboard marine research vessels; physical, biological and geological measurements and sampling techniques. Taught only at Dauphin Island Sea Lab. Summer.

GEOL 1220 COASTAL CLIMATOLOGY (2) LEC. 7. Departmental approval. Controlling factors and features of world climates, with attention to coastal areas; application and interpretation of climate data. Taught only at Dauphin Island Sea Lab. Summer only.

GEOL 2010/2013 MINERALOGY AND OPTICAL CRYSTALLOGRAPHY (5) LEC. 4. LAB. 2. Pr. CHEM 1040. Departmental approval. Physical and chemical properties of minerals, classification and roles with emphasis on natural systems, materials science, health, and environment. Credit will not be given for both GEOL 2010 and GEOL 2013.

GEOL 2020 MARINE GEOLOGY (4) LEC. 2. LAB. 4. Departmental approval. Geology of ocean basins; special emphasis on continental shelves, their sediments and the sedimentary process at work there. Taught only at Dauphin Island Sea Lab. Summer only.


GEOL 2100 ENVIRONMENTAL GEOLOGY (4) LEC. 3. LAB. 2. Pr. GEOL 1100 or GEOL 1103 or GEOL 1107. Emphasis on geology as an environmental science; applied geology, geological hazards and environmental regulations as applied to geologic environmental remediation.


GEOL 3100 TERRESTRIAL VEGETATION THROUGH EARTH HISTORY (3) LEC. 2. LAB. 2. Pr. GEOL 2200 and (BIOL 1020 or BIOL 1027). Plants are primary producers and are the foundation upon which the global ecosystem is based. This course focuses on the development, evolution, and application of the plant fossil record to problems in earth history.
GEOL 3150 ENGINEERING GEOLOGY (3) LEC. 2. LAB. 2. Fundamental geologic principles, materials, and processes that affect engineering projects and programs. Emphasis on pre-construction geological analysis to recognize potential hazards and problems. Credit will not be given for both GEOL 3150 and GEOL 1100.

GEOL 3200 INTRODUCTION TO PALEOBIOLOGY (3) LEC. 2. LAB. 2. Pr. GEOL 1110 or GEOL 1113 or GEOL 1117. The nature of the fossil record, applications of that data to geological and biological questions with emphasis on the concepts using examples from all biotic groups.

GEOL 3300 EVOLUTION AND EXTINCTION OF THE DINOSAURIA (3) LEC. 2. LAB. 2. Pr. GEOL 1100 or GEOL 1103 or GEOL 1107. Departmental approval. Survey of the dinosaurs, their evolution and extinction. Southeastern U.S. dinosaurs.


GEOL 3650 FIELD CAMP (6) LEC. 1. LAB. 10. Pr. GEOL 3400. Instruments and methods used in geological field mapping, interpretation of sedimentary, igneous and metamorphic rocks and deformational analysis. Summer only.

GEOL 4010 SEDIMENTARY PETROLOGY (3) LEC. 2. LAB. 2. Pr. GEOL 3400. The origin, distribution and classification of mineral deposits formed by igneous, metamorphic and sedimentary processes. Introduction of methods of exploration and development.

GEOL 4210 ECONOMIC GEOLOGY (3) LEC. 2. LAB. 2. Pr. GEOL 3400. The origin, distribution and classification of mineral deposits formed by igneous, metamorphic and sedimentary processes. Introduction of methods of exploration and development.

GEOL 4260 INTRODUCTION TO GEOCHEMISTRY (3) LEC. 3. Pr. CHEM 1040 and GEOL 2050. Principles governing the distribution of major, minor and trace elements within the earth; differentiation of elements due to geologic processes and the hydrosphere.

GEOL 4300 GEODYNAMICS (3) LEC. 3. Pr. GEOL 3400 and (MATH 1620 or MATH 1623 or MATH 1627) and PHYS 1510. Structure and dynamics of the earth deduced from seismology, gravity, heat flow and magnetism.

GEOL 4400 INVERTEBRATE PALEONTOLOGY (4) LEC. 3. LAB. 2. Pr. GEOL 3200 and (BIOL 1030 or BIOL 1037). In-depth coverage of one aspect of the fossil record, focusing on preservation and paleaeoecology. Laboratory/discussion sessions and field trips included.

GEOL 5100 HYDROGEOLOGY (3) LEC. 2. LAB. 2. Pr. (GEOL 1100 or GEOL 1103 or GEOL 1107) and CHEM 1030 and (MATH 1610 or MATH 1613 or MATH 1617) and PHYS 1500. Departmental approval. Fundamentals of groundwater flow in porous media, hydrodynamic dispersion, determination of aquifer properties and geological aspects of groundwater occurrences.

GEOL 5220 GEOMORPHOLOGY (3) LEC. 2. LAB. 1. Study of the origin of landforms with emphasis on the eologic processes and structures that generate the landforms and applications of landform analysis. Two all-day weekend trips are required. Two one-hour classes and one two-hour laboratory per week.
GEOL 5240 COASTAL GEOMORPHOLOGY (2) LEC. 5. LAB. 4. Departmental approval. Introduction to coastal sediment processes and applied coastal geomorphology; emphasis on waves, tides, sediments and their impact of anthropogenic influences. Taught only at Dauphin Island Sea Lab. Summer only.

GEOL 5300 BASIN ANALYSIS (3) LEC. 2. LAB. 2. Pr. P/C GEOL 4010. Study of analytical techniques of sedimentary basin fills, including thermal history, litho and biofacies analyses, depositional systems, subsurface logs, seismic reflection, provenance history, evolution, sedimentation and subsidence history.

GEOL 5400 PRINCIPLES OF EARTH SCIENCE (3) LEC. 2. LAB. 2. Departmental approval. A special course for in-service and future teachers only. Internal and surficial geologic processes, meteorology and oceanography.

GEOL 5500 PETROLEUM GEOLOGY (3) LEC. 3. Pr. GEOL 4010. Coverage of petroleum source rocks, migration, reservoir rock characters, and trapping mechanisms. Overview of exploration methods including well-log analysis and seismic interpretation.

GEOL 5600 APPLIED GEOPHYSICS (4) LEC. 3. LAB. 2. Pr. (GEOL 1100 or GEOL 1103 or GEOL 1107 or GEOL 3150) and (MATH 1620 or MATH 1623 or MATH 1627) and PHYS 1510. Departmental approval. Overview of geophysical methods with applications to resource, tectonic and environmental analyses. Seismic refraction and reflection, gravity, magnetics, electrical and electromagnetic methods will be included.

GEOL 5720 PANAMA STUDY ABROAD-CLIMATE CHANGE AND ENVIRONMENT (3) LEC. 3. Pr., Departmental approval. Four-week course intended to give students a general understanding of the potential impacts of climate change on Panama's environment via a mix of lectures, hands-on activities and field trips.

GEOL 6060 INVERTEBRATE PALEONTOLOGY (4) LEC. 3. LAB. 2. Pr. GEOL 3200 and (BIOL 1030 or BIOL 1037). In-depth coverage of on aspect of the fossil record, focusing on preservation and paleaecology. Laboratory/discussion sessions and field trips included.

GEOL 6100 HYDROGEOLOGY (3) LEC. 2. LAB. 2. Pr. (GEOL 1100 or GEOL 1103 or GEOL 1107) and CHEM 1030 and (MATH 1610 or MATH 1613 or MATH 1617) and PHYS 1500. Departmental approval. Fundamentals of groundwater flow in porous media, hydrodynamic dispersion, determination of aquifer properties and geological aspects of groundwater occurrences.

GEOL 6220 GEOMORPHOLOGY (3) LEC. 2. LAB. 2. Study of the origin of landforms with emphasis on the eologic processes and structures that generate the landforms and applications of landform analysis. May count either GEOL 6220 or GEOG 6220.

GEOL 6240 COASTAL GEOMORPHOLOGY (2) LEC. 5. LAB. 4. Departmental approval. Introduction to coastal sediment processes and applied coastal geomorphology; emphasis on waves, tides, sediments and their impact of anthropogenic influences. Taught only at Dauphin Island Sea Lab. Summer only.

GEOL 6300 BASIN ANALYSIS (3) LEC. 2. LAB. 2. Pr. GEOL 4010. Departmental approval. Study of analytical techniques of sedimentary basin fills, including thermal history, litho and biofacies analyses, depositional systems, subsurface logs, seismic reflection, provenance history, evolution, sedimentation and subsidence history.

GEOL 6400 PRINCIPLES OF EARTH SCIENCE (3) LEC. 2. LAB. 2. Departmental approval. A special course for in-service and future teachers only. Internal and surficial geologic processes, meteorology and oceanography.

GEOL 6500 PETROLEUM GEOLOGY (3) LEC. 3. Pr. P/C GEOL 4010. Geology/Geography graduate students who took GEOL 4010 ("P/C"). Coverage of petroleum source rocks, migration, reservoir rock characters, and trapping mechanisms. Overview of exploration methods including well-log analysis and seismic interpretation.

GEOL 6600 APPLIED GEOPHYSICS (4) LEC. 3. LAB. 2. Pr. (GEOL 1100 or GEOL 1103 or GEOL 1107 or GEOL 3150) and (MATH 1620 or MATH 1623 or MATH 1627) and PHYS 1510. Departmental approval. Overview of geophysical methods with applications to resource, tectonic and environmental analyses. Seismic refraction and reflection, gravity, magnetics, electrical and electromagnetic methods will be included.

GEOL 7100 GEOCOMMUNICATION (3) LEC. 3. Departmental approval. Instruction and practice in written and oral communication skills necessary for a successful career in the geosciences; emphasis on preparation of scientific articles, technical reports, abstracts, and thesis; preparation and delivery of oral presentations.

GEOL 7200 TECTONICS (3) LEC. 2. LAB. 2. Pr. GEOL 2050 and GEOL 4010. Departmental approval. Emphasis will be placed on plate tectonics and driving forces, evolution of collisional, transform and extensional systems, and dynamic indicators of past and current tectonic processes.
GEOL 7220 GEOGRAPHIC INFORMATION SYSTEMS AND MARINE RESEARCH (3) LEC. 10. LAB. 15. Departmental approval. Introduction to geographical information system (GIS) techniques with a focus on application in the marine environment. Taught only at Dauphin Island Sea Lab. Summer only.


GEOL 7260 AQUEOUS AND ENVIRONMENTAL GEOCHEMISTRY (3) LEC. 2. LAB. 2. Pr. CHEM 1040 and GEOL 2050. Departmental approval. Study of water-rock reactions that control the chemical composition of groundwater; aqueous geochemistry of trace elements; groundwater pollution, remediation and geomic robiology.

GEOL 7300 CYCLES THROUGH EARTH HISTORY (3) LEC. 2. LAB. 2. Pr. GEOL 4100 and GEOL 4260. Discussion of the fundamental processes controlling sedimentary cycles at different physical, biotic, and temporal scales.

GEOL 7310 ISSUES IN PALEONTOLOGY (3) LEC. 3. Pr. GEOL 3200. Advanced applications of paleontological data sets to topics that may include taphonomy, biogeochemistry, evolution, asystematic functional morphology, paleoecology, paleoclimatology and biostratigraphy.

GEOL 7400 ADVANCED ECONOMIC GEOLOGY (3) LEC. 2. LAB. 2. Pr. GEOL 4210. Departmental approval. The practical and theoretical aspects of economic geology as applied to exploration and development of natural resources.

GEOL 7410 GEOLOGY OF ORGANIC MATTER (3) LEC. 2. LAB. 2. Pr. GEOL 4010 and GEOL 4110. Departmental approval. The origins, classifications, taphonomy of organic matter, modern and ancient processes and environments of deposition of organic-rich strata, including hydrocarbon- source rocks and coals. Laboratory and field trips required.

GEOL 7450 MINERAL RESOURCES AND THE ENVIRONMENT (3) LEC. 2. LAB. 2. Pr. CHEM 1040 and GEOL 2050. Overview of geology and geographic distribution of mineral resources; economic aspects affecting their extraction; environmental impacts and cost of mineral resource extraction.

GEOL 7550 ADVANCED GEOPHYSICAL METHODS (3) LEC. 2. LAB. 2. Pr. GEOL 6600. Departmental approval. Advanced treatment of geophysical methods, data interpretation and modeling. Applications to resource development and environmental assessments will be explored, with emphasis on seismic methods.

GEOL 7600 PETROLOGY (3) LEC. 2. LAB. 2. Pr. GEOL 2050 and GEOL 4010. Departmental approval. The description, classification, formative processes, and petrologic interpretation of igneous, metamorphic and sedimentary rocks.

GEOL 7610 STRUCTURAL AND METAMORPHIC ANALYSIS (3) LEC. 2. LAB. 2. Pr. GEOL 2050 and GEOL 3400 and GEOL 3650. Quantitative analysis of dynamic, kinematic and chemical responses of rocks and minerals to crustal movements and dynamo thermal metamorphism.

GEOL 7650 FACIES ANALYSIS AND SEQUENCE STRATIGRAPHY (3) LEC. 2. LAB. 2. Pr. GEOL 4010 and GEOL 4110. Departmental approval. Systematic analysis of modern and ancient deposition facies, and their interpretation in a sequence stratigraphic context. Laboratory and field trips required.

GEOL 7930 DIRECTED STUDIES (1-3) LEC. 3. Departmental approval. Directed studies. May incorporate literature, field and/or laboratory research in any proportion. Subject matter and credit hours shall be determined by student and directing faculty. Course may be repeated for a maximum of 3 credit hours.

GEOL 7980 CAPSTONE PROJECT (1-3) LEC. SU. Literature, field and/or laboratory research directed towards completion of capstone project required for non-thesis option. Course may be repeated for a maximum of 3 credit hours.

GEOL 7990 RESEARCH AND THESIS (1-10) MST. Departmental Approval. Course may be repeated with change in topics.