Geoscience (GSCI)

earth.uconn.edu

5000. Geoscience Core Course

Three credits. May be repeated for a maximum of six credits.

Exposes students to a solid background in a variety of topics related to integrative geosciences, emphasizing interdisciplinarity. Development of speaking skills through oral presentations, and writing skills through preparation and defense of large, interdisciplinary grant proposals. Required of all first year graduate students in Geosciences.

5050. Special Problems in Geology

Variable (1-6) credits. Prerequisite: Department consent. May be repeated for credit up to six times with a change of content.

Advanced study and research in geology.

5110. Sediment Transport

Three credits.

The mechanics of sediment transport with particular emphasis on the processes governing transport in coastal and estuarine areas. Initiation of motion for cohesive and noncohesive materials, bed and suspended load transport, bed forms, sediment-flow interactions modeling considerations.

5150. Applied Data Analysis in Earth Sciences

Three credits. Recommended preparation: STAT 1000Q or 1100Q, GEOG 3500Q. Not open for credit to students who have passed GEOG 4150 or GSCI 4150.

Multivariate spatial analysis methods and statistical inference in earth science, emphasizing how to translate conceptual understanding into computer code.

5210. Glacial Processes and Materials

Three credits. Includes two weekend days of field trips to be scheduled, and tutorial meetings. Recommended preparation: GSCI 3020. Not open for credit to students who have passed GSCI 4210.

The climates and dynamics of glaciers, the geologic processes responsible for the materials and landforms of glaciated regions, and the applications of glacial geology to paleoclimatology, paleoecology, land use history, hydrology, engineering, and natural resources.

5230. Advanced GIS for Remote Sensing for Geoscience Applications

(Also offered as GEOG 5230.) Three credits. Not open to students who have passed GEOG 4520.

Research methods for using Geographic Information Systems, remote sensing, and image interpretation to investigate problems in geoscience. Includes research techniques for data acquisition, processing and analysis of Digital Elevation Models and satellite imagery. Geologic materials, processes, landforms and landscapes.

5310. Advanced Structural Geology

Three credits.

Application of finite and incremental strain analyses using advanced geometric techniques. This course integrates field studies of deformed rocks with theoretical understanding and quantitative analysis.

5320. Advanced Plate Tectonics

Three credits.

Introduces students to techniques used in analyzing plate motions on a sphere, including poles of rotation and instantaneous and finite motions. The course integrates geologic data and analytical techniques with a rigorous understanding of plate motions and provides students with a global understanding and appreciation of the Earth.

5510. Applied Geophysics for Geologists and Engineers

Three credits.

Introductory survey of surface and borehole geophysical methods and their application to hydrogeologic, environmental monitoring, and geotechnical engineering studies. Laboratory involves geophysical field measurement, data reduction and geologic interpretation.

5520. Exploring and Engineering Seismology

Three credits.

Theory of elasticity applied to wave propagation: equations of motion; reflection and refraction of elastic waves; velocity analysis and fundamental petrophysics; and principles of detecting subsurface interfaces and structures.

5530. Applied and Environmental Geophysics

Three credits. Perquisite: Instructor consent.

Potential theory (gravity, static electricity and magnetic fields), electromagnetic coupling, Maxwell's equations; electromagnetic wave propagation; principles of detection of subsurface interface and structures by geophysical methods.

5550. Physics of the Earth

Three credits.

The composition, structure, and dynamics of the earth's core, mantle, and crust inferred from observations of seismology, geomagnetism, and heat flow.

5560. Fundamentals of Planetary Science

Three credits.

Evolution of the solar system, celestial mechanics, tidal friction, internal composition of planets, black-body radiation, planetary atmospheres.

5710. Advanced Hydrogeology

Three credits.

Transport processes in groundwater systems. Mathematical methods in groundwater hydrology. Water quality and resource evaluation.

5720. Groundwater Modeling

Three credits.

Numerical techniques for modeling flow and contaminant transport in groundwater systems. Model design, calibration, visualization, verification and sensitivity analysis. Application to field sites.

5790. Field Methods in Hydrogeology

Variable (1-6) credits. May be repeated for a maximum of six credits.

Field methods associated with ground water and contamination assessments.

5850. Paleoclimatology

Three credits. Not open to students who have passed GSCI 4850.

Introduction to the geological evidence, research methods, and hypotheses associated with major climatic events in Earth's history through a combination of lectures, paper discussions, and a climate modeling project.

6130. Seminar in Paleontology

Variable (1-6) credits. Prerequisite: Department consent. May be repeated for a maximum of six credits with change of content.

Readings and discussions on recent advances in paleontology and paleobiology.

6340. Seminar in Tectonics

Three credits.

Readings and discussions of recent advances in tectonics.

6520. Advanced Seismology

Three credits. Prerequisite: MATH 5410; MATH 5411, which may be taken concurrently.

Elastic wave propagation in plane layered media; seismogram synthesis by ray parameter integration, ray approximations, and mode summation; earthquake source representations.

6530. Geophysical Inverse Theory

Three credits.

Fitting geophysical model parameters to data. Topics include model uniqueness, resolution, and error estimation.

6540. Seminar in Geophysics

Variable (1-6) credits. Prerequisite: Instructor consent.

Readings and discussions of recent advances in geophysics.

6550. Special Topics in Geophysics

Variable (1-6) credits. Prerequisite: Instructor consent. May be repeated for credit.