
EARTH SCIENCES (EASC)

EASC 100 Physical Geology (3 credits)

This course is an introduction to the processes that formed and continue to shape the earth. Lecture topics include continental drift, rock and mineral forming processes, and the effects of agents of erosion such as glaciers, streams and waves. The laboratories develop skill in rock identification and map interpretation. Two hours of lecture and one two-hour laboratory period weekly. Satisfies the GER in Physical and Biological Sciences. *Either semester*

EASC 101 Historical Geology (3 credits)

Prerequisite: EASC 100

The origin and evolution of the earth and the life upon it. Two hours of lecture and one two-hour laboratory period weekly. *Spring semester*

EASC 102 History of the Earth (3 credits)

Temporal and spatial aspects of earth in the universe. Co-evolution of life and its home. Satisfies the GER in Physical and Biological Sciences (non-lab). *Spring semester*

EASC 194 Environmental Geology (3 credits)

This course introduces students to the application of geologic principles in recognizing and controlling the effects of environmental problems such as earthquakes, volcanoes, floods, beach erosion, hazardous waste disposal and ground water quality. Satisfies the GER in Physical and Biological Sciences (non-lab course). *Either semester*

EASC 240 Hydrology (3 credits)

Prerequisite: Consent of the instructor

Relations of surface to groundwater. Geologic controls of flow in ideal mathematical models and imperfect natural settings. Water supplies as renewable resource. Two hours of lecture and one two-hour laboratory period weekly. *Spring semester*

EASC 283 Structural Geology (3 credits)

Prerequisite: EASC 100, EASC 101

Analysis and origin of rock structures. Two hours of lecture and two two-hour laboratory period weekly. *Spring semester*

EASC 284 Geomorphology (3 credits)

Prerequisite: EASC 100 or consent of the instructor

Relationships between gradational and tectonic forces and the resulting surface configuration of the earth. Two hours of lecture and one three-hour laboratory period weekly. *Fall semester*

EASC 290 Dinosaur Paleobiology (3 credits)

Prerequisite: Consent of the instructor

The most recent hypotheses concerning the paleogeography, functional morphology and paleoecology of the dinosaurs

are considered. Various causes advanced to account for their extinction 65 million years ago are critically appraised. *Offered even years, Spring semester*

EASC 300 Excursions in Geology (3-6 credits)

Prerequisite: Consent of the instructor

Preliminary lectures on a study area, followed by 1 to 6 weeks of interdisciplinary field study leading to a final report. Travel and living expenses will be borne by students. Study area will most likely be in the western U.S., although foreign areas are possible. This course is of interest to archaeology, biology, and geography majors as well as other students.

EASC 301 Solar System Astronomy (3 credits)

Prerequisite: MATH 100 or the equivalent

Topics include the sun, planets, satellites, comets, asteroids, astronomical instruments, time keeping and celestial coordinates, and the early history of astronomy. Use of the BSC observatory and instruments and a trip to a planetarium are required. *Spring semester*

EASC 305 Physical Oceanography (3 credits)

Prerequisite: Any 100-level Biology, Chemistry, Earth Science, Geography (Physical Science), or Physics course

This course surveys the physical aspects of earth's ocean, including the geology of the oceanic crust and seafloor, ocean currents, tides, waves, and sediment transport and deposition. The importance of the oceans in terms of global climate change is also discussed. *Fall semester*

EASC 310 Geophysics (3 credits)

Prerequisite: EASC 100 and PHYS 182 or PHYS 244

This course focuses on the study of the physical processes of the solid Earth. Topics include seismology, the Earth's gravitational and magnetic fields, heat flow, plate tectonics, and the internal structure of the Earth. The laboratory will provide an overview of the use of geophysical techniques in oil, gas and mineral exploration as well as in engineering and environmental applications. Two hours of lecture and two hours of laboratory each week. *Fall semester*

EASC 311 Geochemistry (3 credits)

Prerequisite: EASC 100, EASC 372 and CHEM 131, CHEM 132

In this course chemical principles are applied to geologic problems to examine the processes that control the chemical composition of natural waters on and near the surface of the earth. Topics to be investigated include seawater chemistry, river water chemistry, groundwater chemistry, and the chemistry of hot springs and geysers. The chemical interaction between rock and water will be a central theme of the course as this process is an important control on the chemistry of water in virtually all geologic environments. Important global geochemical cycles will also be explored with an emphasis on how these cycles affect environmental problems such as global warming. *Spring semester*

Note: This section is arranged in course number order. See course prefix key for assistance in locating department sections.

Note: See Catalog Web Addenda at www.bridgew.edu/catalog/addenda/ as that information supersedes the published version of this catalog.

EASC 317 Remote Sensing of the Environment (3 credits)

Prerequisite: Written permission of the instructor and introductory courses in earth science, or biology, or geography, or archeology or other approved majors

Analysis and interpretation of digital images from satellite and other platforms. Multispectral and hyperspectral data collection and digital image processing. Remote sensing of the atmosphere, vegetation, soils, water, geology, engineering, land use/cover and other data that can be imaged from remote platforms. Multidisciplinary satellite images from NASA and other space agencies will be utilized. Two two-hour lecture/laboratory periods weekly. *Fall semester*

EASC 372 Mineralogy (4 credits)

Prerequisite: EASC 100 and CHEM 131

Geometrical and X-ray crystallography followed by the determinative mineralogy of ore and rock-forming minerals. Two hours of lecture and two 2-hour laboratory periods weekly. *Fall semester*

EASC 380 Coastal Processes (3 credits)

Prerequisite: MATH 141 and MATH 142, EASC 100 or GEOG 100

The frequently complex fluid-solid interactions which result in erosion and deposition in coastal environments are developed in this course. Methods of measurement and prediction are presented. *Offered even years, Fall semester*

EASC 440 Contaminant Hydrogeology (3 credits)†

Prerequisite: EASC 100, EASC 240, CHEM 131, MATC 141, MATH 142

The fate and transport of groundwater contaminants in various hydrogeologic regimes are presented in this course. Methods for conducting hydrogeologic investigations are discussed in detail.

EASC 463 Petrology (3 credits)†

Prerequisite: EASC 372

Megascope and microscopic classification of rocks and an introduction to petrogenesis. One hour of lecture and two 2-hour laboratory periods weekly. *Spring semester*

EASC 475 Paleontology (3 credits)†

Prerequisite: EASC 100, EASC 101 or consent of the instructor

A survey of the fossil record stressing the most important invertebrate phyla and their environmental relationships. Two hours of lecture and one two-hour laboratory period weekly. *Offered odd years, Spring semester*

EASC 476 Sedimentology and Stratigraphy (3 credits)†

Prerequisite: EASC 100, EASC 101 or consent of the instructor
Introduction to modern concepts and principles in sedimentology, paleoecology, and correlation: lithostratigraphic and biostratigraphic classification and interpretation of depositional and organic environments. Two hours of lecture and one two-hour laboratory period weekly. *Offered odd years*

EASC 490 Field Methods in Geology (3 credits)†

Prerequisite: EASC 100, EASC 101 or consent of the instructor
Collection, processing and interpretation of field data developed by geologic mapping. Presentation of geologic reports involving maps, cross-sections and sample data. One hour of lecture and two 2-hour laboratory periods weekly. *Spring semester*

EASC 496 Seminar in Geology (1 credit each semester)†

Prerequisite: Senior standing in geology, earth science or chemistry/geology

This course focuses on the development of thought concerning current global models and/or continuing controversies in geology. One credit will be earned per semester for a total of 2 credits to be awarded at the end of the second semester. *Fall semester*

EASC 497 Research in Earth Science (3 credits)

Prerequisite: Consent of department; formal application required
Preparation of a research paper in Earth Sciences.

EASC 498 Field Experiences in Earth Science (3-15 credits)

Prerequisite: Consent of the department; formal application required
Intended to provide an opportunity for senior earth science majors to gain practical experience in the field. Placements will be made in appropriate local, state and federal agencies as well as with private corporations. *Either semester*

EASC 499 Directed Study in Earth Science (1-3 credits)

Prerequisite: Consent of the department; formal application required
Open to juniors and seniors who have demonstrated critical and analytical abilities in their studies and who wish to pursue a project independently. May be taken twice for a maximum of six credits. *Either semester*

Other Approved Courses:

EASC 201 Topics in Earth Science for Elementary School Teachers
EASC 230 Engineering Geology
EASC 302 Stellar and Galactic Astronomy
EASC 306 Biological Oceanography

† May be taken for graduate level credit.

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EASC 315 Computer Applications in Earth Science
EASC 373 Optical Mineralogy
EASC 374 Optical Petrology
EASC 375 X-Ray Analysis
EASC 462 Geology of North America
EASC 464 Economic Geology I
EASC 465 Economic Geology II
EASC 466 Glacial Geology
EASC 477 Micropaleontology
EASC 497 Research in Earth Science
EASC 501 Observational Astronomy
EASC 502 Research
EASC 503 Directed Study
EASC 504 Observational Meteorology
EASC 506 Coastal Geology and Oceanography
EASC 550 Modern Developments in Earth Science
EASC 560 Special Topics
EASC 590 Field Studies in Geology

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