

Eastern Oregon University

Geology

GEOLOGY MINOR PROGRAM OBJECTIVES

We offer a variety of Geology courses designed

- To provide a basis for understanding Earth's geological phenomena for all who enjoy the out-of-doors.
- To fill the general education physical science requirements of non-science majors.
- To give students wishing to pursue geology as a career a strong background in the fundamentals of geology which will make it possible for them to successfully pursue undergraduate and advanced geology degree at other institutions.
- To provide the core of the General Science and Environmental Studies Liberal Studies program experiences and a background in earth sciences for all science teachers.
- To provide complimentary background for other program areas
- The Natural Sciences, Physical Anthropology, Geography and Land Use Planning, Forestry and Agriculture, etc.
- To give students wishing to pursue geology as a career a solid foundation of basic geology skills and knowledge.
- To teach students the basic techniques of geology field, laboratory and literature research.
- To give students experience presenting the results of their

literature and field research orally and in writing to their peers and other audiences.

LEARNING OUTCOMES

- Students will learn: Identification of rocks, minerals, soils and fossils; use of topographic and geologic maps, air and satellite photos, radar and digital images; making geologic measurements (describing outcrops, measuring strike and dip, taking notes, etc.) in the field, in the laboratory, and in class and individual research projects.
- Students will be able to present the results of their investigation orally, in writing and in poster form.

MEANS OF ASSESSMENT

- Field projects, examinations and research papers.
- Writing and compiling field notes, cross-sections and geologic maps.
- Group and individual poster and oral presentations.
- Writing of reviews, abstracts, research papers and senior theses.

TWO YEAR TRANSFER PROGRAM

The first two years of transfer work in Geology are offered at EOU.

First Year

Mathematics 111, 112
Geology 201, 202, 203

Electives

Chemistry 204, 205, 206

Second Year

Because of the wide variety of transfer programs and student backgrounds, the second year of the program should be developed in consultation with your adviser.

REQUIREMENTS FOR THE MINOR IN GEOLOGY

1. Complete a minimum of 30 graded credits in geology to include GEOL 201, 202, and 203 and a minimum of 15 upper division (300-400) credits in geology including at least one 400 level course.

2. A grade of "C-" or better in each course counting toward the minor with an overall GPA of 2.00.

3. A minimum of 10 hours counting toward the minor must be completed at Eastern Oregon University.

GEOLOGY COURSE DESCRIPTIONS

GEOL 101- Intro Geol Sci*SMI Credits: 3.00

Gen Ed Core-Natural, Math & Info Sciences

An examination of the attitudes of scientists and their methodology including historical perspectives and how science influences and is influenced by philosophy and culture. Current controversies in the earth sciences will be discussed and debated.

GEOL 102- Environmental Geol*SMI Credits: 3.00

Gen Ed Core-Natural, Math & Info Sciences

Development of an understanding of the impact of natural processes on our lives and an appreciation for the importance of sound environmental planning. Volcanism, earthquakes, landsliding, flooding, groundwater pollution, waste disposal and other environmental problems. Introduction to land-use planning. Prerequisite: GEOL 101 or consent of instructor.

GEOL 103- Geological Ocean*SMI Credits: 3.00

Gen Ed Core-Natural, Math & Info Sciences

Exploration of the deep sea ridges and the development of plate tectonic theory. Coastal features, the processes that shape them, and man's battle with the natural forces in the coastal zone. Origin and history of the continental margin and the battles over offshore resources. Prerequisite: GEOL 101, 102, or consent of instructor.

GEOL 104- Earth Science Lab*SMI Credits: 1.00

Gen Ed Core-Natural, Math & Info Sciences

Laboratory activities in selected areas of earth science including rock and mineral identification, earthquakes, volcanism, fossils and other topics. Prerequisite: GEOL 101, 102 and 103, or consent of instructor. Concurrent enrollment is acceptable.

GEOL 105- Equakes&Volcanoes*SMI Credits: 2.00

Gen Ed Core-Natural, Math & Info Sciences

Processes involved in earthquakes and volcanic activity, particularly as they relate to plate tectonics and various effects and features that result from activity. Special attention will be paid to past and potential earthquake and volcanic activity in the Northwest.

GEOL 106- E OR Geol/Gold Mining*SMI Credits: 2.00

Gen Ed Core-Natural, Math & Info Sciences

Geological history of Eastern Oregon with special attention to those processes and events relating to the emplacement of gold in the region. The cultural history of the discovery and exploitation of gold and its impact on the region will be covered.

GEOL 110- Selected Topics Credits: 1.00 TO 6.00

Current topics in geology and earth sciences, focusing on aspects of geology, astronomy, oceanography, energy and mineral resources, and other fields of interest.

GEOL 121- Geol Wallowa Mtns*SMI Credits: 2.00

Gen Ed Core-Natural, Math & Info Sciences

This is a field-oriented course utilizing a variety of printed materials (road logs, maps, monographs, etc.) and a classroom component of slide presentations and lectures to provide an overview and background material to assist the student in a field study of the Wallowa Mountains and related surrounding areas.

GEOL 122- Geol John Day Cntry*SMI Credits: 2.00

Gen Ed Core-Natural, Math & Info Sciences

Study of fossils and fossil beds and their relationship to gold deposits in the John Day region of north-central Oregon. This course requires an independent study field trip to the area.

GEOL 123- Geol Columbia Rvr Grge*SMI Credits: 2.00

Gen Ed Core-Natural, Math & Info Sciences

Course studies the Columbia River Gorge region. Course requires an independent study field strip to the area.

GEOL 124- Geol Oregon Coast*SMI Credits: 2.00

Gen Ed Core-Natural, Math & Info Sciences

Investigation of the geological evolution of the central Oregon coast. Geologic processes and features and geological materials are discussed. The course requires an independent study field trip to the area.

GEOL 201- Physical Geology*SMI Credits: 5.00

Gen Ed Core-Natural, Math & Info Sciences

Development of understanding and appreciation of earth features and the agents and processes that form and change them; characteristics of the common rocks and minerals and their economic importance; the main sequence of earth history. Field trips to surrounding areas of geologic interest. Prerequisite: GEOL 201 - None. GEOL 202 - GEOL 201 or consent of instructor.

GEOL 201L - Phys Geology Lab Credits: .00

GEOL 202- Physical Geology*SMI Credits: 5.00

Gen Ed Core-Natural, Math & Info Sciences

Development of understanding and appreciation of earth features and the agents and processes that form and change them; characteristics of the common rocks and minerals and their economic importance; the main sequence of earth history. Field trips to surrounding areas of geologic interest. Prerequisite: GEOL 201 or consent of instructor.

GEOL 202L - Phys Geology Lab Credits: .00

GEOL 203- Historical Geology*SMI Credits: 5.00**Gen Ed Core-Natural, Math & Info Sciences**

Fossil animals and plants; methods of correlating and interpreting the geologic past. Field trips to nearby fossil locations. Prerequisite: GEOL 201 and 202 or consent of instructor.

GEOL 203L - Historical Geol Lab Credits: .00**GEOL 210- Selected Topics Credits: 1.00 TO 6.00**

Current topics in geology and earth sciences, focusing on aspects of geology, astronomy, oceanography, energy and mineral resources, and other fields of interest.

GEOL 304- Geol Sci Lab Credits: 1.00

Introduction to the concepts and techniques of teaching geology and earth science at the elementary and secondary school levels. Prerequisite: GEOL 101, 102 and consent of instructor. Student must have at least sophomore standing to register for this course.

GEOL 306- Volcanology Credits: 5.00

An introduction to the mechanisms and products of volcanic eruptions with special emphasis on volcanism in the Pacific Northwest and the Eastern Oregon area; Volcanic hazards assessment and mitigation; and volcanism on other planets. Prerequisite: GEOL 201, 202 and 203 or consent of instructor. Student must have at least sophomore standing to register for this course.

GEOL 310- Selected Topics Credits: 1.00 TO 6.00

Current topics in geology and earth sciences, focusing on aspects of geology, astronomy, oceanography, energy and mineral resources, and other fields of interest. Prerequisite: GEOL 201, 202, 203 or consent of instructor. Student must have at least sophomore standing to register for this course.

GEOL 310L - Geology 310L Credits: .00

Student must have at least sophomore standing to register for this course.

GEOL 311- Mineralogy Credits: 5.00

Mineral identification using physical properties, chemical composition and crystallography; classification, origin and occurrence of minerals. Prerequisite: GEOL 201, 202 and 203 or consent of instructor. Student must have at least sophomore standing to register for this course.

GEOL 312- Optical Mineralogy Credits: 5.00

Mineral identification using optical properties and the petrographic microscope. Prerequisite: GEOL 311, or consent of instructor. Student must have at least sophomore standing to register for this course.

GEOL 313- Petrology Credits: 5.00

Description, classification, modes of occurrence and theories of the origins of igneous and metamorphic rocks, including optical mineralogy and use of the petrographic microscope. Prerequisite: GEOL 311 and 312, or consent of instructor. Student must have at least sophomore standing to register for this course.

GEOL 315- GIS:App Geoforensics*SMI Credits: 2.00**Gen Ed Core-Natural, Math & Info Sciences**

This course is designed to introduce the concept of Geographic Information Systems (GIS) through examining a multidisciplinary approach to the detection of clandestine graves. Student must have at least sophomore standing to register for this course.

GEOL 334- Sedimentology/Stratigraphy Credits: 5.00

Sediment description; Sedimentary processes and products; Characteristics of sedimentary environments; and Stratigraphic analysis. Prerequisite: GEOL 201, 202, 203 or consent of instructor. Student must have at least sophomore standing to register for this course.

GEOL 350- Structural Geology Credits: 5.00

Outcrop studies and geologic mapping, with special emphasis on Eastern Oregon; rock structures and structural analysis. Prerequisite: GEOL 201, 202, 203 or consent of instructor. Student must have at least sophomore standing to register for this course.

GEOL 401- Capstone Credits: 1.00 TO 15.00

Student research supervised by one of the geology faculty. Includes preparation of a research proposal and timetable; significant fields, laboratory and library study; and a public presentation of research results and/or submission of a written report in a format suitable for the Eastern Oregon University science journal. Prerequisite: GEOL 201, 202, 203; at least one upper division geology course; and junior class standing. Student must have at least junior standing to register for this course.

GEOL 405- Reading & Conference Credits: 1.00 TO 15.00

Individual student or small group discussion with a faculty member about a topic of interest. Heavy reading assignments are typical. Prerequisite: GEOL 201, 202, 203; and junior class standing. Student must have at least junior standing to register for this course.

GEOL 407- Seminar Credits: 1.00 TO 15.00

Student lectures and written paper on aspects of a broad topic of interest. Prerequisite: GEOL 201, 202, 203; and junior class standing. Student must have at least junior standing to register for this course.

GEOL 410- Selected Topics Credits: 1.00 TO 6.00

Topics of current interest to students and faculty; topics may include structural geology, petrology, geomorphology, paleontology, field methods and other fields of interest. Prerequisite: GEOL 201, 202, 203 or consent of instructor. Student must have at least junior standing to register for this course.

GEOL 420- Field Invest:Topical Credits: 1.00 TO 6.00

Field expeditions to unique geological, biological and historical areas of North America. Students will undertake studies of the areas selected for exploration and keep detailed field journals. Prerequisite: GEOL 201, 202, 203 or consent of instructor. Student must have at least junior standing to register for this course.

GEOL 431- Paleontology Credits: 5.00

An introduction to the morphology and ecology of fossil invertebrate organisms with an emphasis on fossils of the Oregon coast. Prerequisite: GEOL 201, 202, 203 or consent of instructor. Student must have at least junior standing to register for this course.

GEOL 441- Glacial Geology Credits: 5.00

Glacier formation, structures and flow; Origin of ice ages; The Pleistocene ice ages, focusing on Eastern Oregon and the Pacific Northwest. Prerequisite: GEOL 201, 202, 203 or consent of instructor. Student must have at least junior standing to register for this course.

GEOL 451- Hydrology Credits: 5.00

Basic elements of surface and groundwater hydrology with emphasis on precipitation input, stream flow and groundwater systems. Prerequisite: GEOL 201, 202, 203 or consent of instructor. Student must have at least junior standing to

register for this course.

GEOL 453- Geology Pacific NW Credits: 5.00

Introduction to the geological history of the region. Emphasis on selected physiographic provinces including their structure, lithology, mineral resources, and environmental concerns as related to geology. Field trips to representative areas. Prerequisite: GEOL 201, 202, 203 or consent of instructor. Student must have at least junior standing to register for this course.

GEOL 510- Selected Topics Credits: 1.00 TO 6.00

Topics of current interest to students and faculty; topics may include structural geology, petrology, geomorphology, paleontology, field methods and other fields of interest. Prerequisite: GEOL 201, 202, 203 or consent of instructor. Student must have graduate standing to register for this course.