

Geology

G 201, 202, 203 Geology (4 each)

A systematic study of planet earth. The nature and origin of common minerals, rocks and geologic structures; the processes and products of erosion; and the evolution of the earth's crust are studied through readings, lectures, laboratories, and voluntary field trips. Three lectures and one two-hour laboratory. No prerequisite.

G 301 Introductory Field Methods (3)

Introduction to the methods and techniques of geological observation and interpretation, with an emphasis on understanding earth processes in the field and reconstructing the physical history of the earth. Topics include techniques in geologic mapping, stratigraphy, petrology, structural geology, geomorphic analysis, hydrogeology, geotechnical testing, geological illustration, and report writing. Two hours of lecture plus one two hour laboratory; required weekend field trips. PREREQ: G 201 and G 202, or consent of instructor.

G 321 Structural Geology (3)

Introduction to mapping, analysis and interpretation of folds, faults, lineations, foliations, and other structures exhibited by rocks. Emphasis is on the basic techniques of analyzing geologic structures associated in space and time and interpreting the structural history of the lithosphere. Two hours of lecture and one two-hour laboratory per week; required field trip. PREREQ: G 201 or consent of instructor.

G 322 Geomorphology and Aerial Photo Interpretation (3)

A study of the processes acting to modify the configuration of the earth's surface and landscapes resulting from these processes. Maps and aerial photos of landforms studied in the laboratory include those depicting regions of North American physiographic provinces. One two-hour lecture and one two-hour laboratory. PREREQ: Consent of instructor.

G 351 Geology for Educators (3)

Lab intensive course emphasizing fundamental principles of geology, including topics in rocks and minerals, plate tectonics, constructive and destructive earth surface processes, geological hazards, and hydrology, which form the Oregon Science Benchmark Standards in earth science. Two hours of lecture and one two-hour laboratory per week. Cannot be used as an upper-division elective for students majoring in Earth Science.

G 392 Sedimentary Geology (3)

Description and interpretation of sedimentary lithology, textures and structures, primarily at the hand sample and outcrop scale. The principles of transport/depositional processes, sedimentary environments, use of facies models for observation and prediction, and controls of tectonics, climate, sediment supply, and eustasy on sedimentation will be discussed. Two hours of lecture and one two-hour laboratory per week. PREREQ: G203 or consent of instructor.

G 401 Research (1-15)

Terms and hours to be arranged.

G 406 Special Individual Studies (1-15)

Terms and hours to be arranged.

G 407 Senior Seminar (1)

Students will conduct in-depth study and research on a broad-ranging topic in the Earth Sciences. Assessment will be based primarily on a formal presentation, which each student will give on their sub-topic, and on student participation in weekly meetings in which the class will discuss the Earth Science topic/issue. Two hours of lecture. PREREQ: Senior standing in Earth Sciences.

G 408/508 Workshop (1-15)

Terms and hours to be arranged.

G 431/531 Paleobiology (3)

The evolution of terrestrial and marine ecosystems interpreted from the fossil record; the application of paleontological data to resolving problems in earth history. One two hour lecture plus one two hour laboratory. Offered in alternating years. PREREQ: A beginning biology course or consent of instructor. Recommended: G 203.

G 440/540 Fossils of Oregon (3)

An introduction to the marine and terrestrial fossil record and paleoenvironments of Oregon; weekend field trips are required. Two hours of lecture and one two-hour laboratory per week.

G 450/550 Introduction to Petrology (3)

Focus on the textures, compositions and genetic associations of rocks. Emphasis is on the hand-sample study of diverse suites of rock types. Study of the structure, chemistry, physical properties, and occurrences of rock-forming minerals will augment the rock study. Two hours of lecture and one two-hour laboratory. PREREQ: G 201, G 351, or consent of instructor.

G 453/553 Geology of the Pacific Northwest (3)

An introduction to geology, geological history, tectonic evolution, geological resources, and landscape development of western North America, with an emphasis on the geology of Oregon. Three hours of lecture per week. PREREQ: A general geology course or consent of instructor.

G 454/554 Volcanology (3)

Study of the processes and products of volcanism. Focus will be on rock types, structures, field relations, tectonic settings, conditions of origin, and geologic history of volcanism with specific emphasis on the Pacific Northwest. Three hours of lecture. Offered in alternating years. PREREQ: Introductory Geology course or consent of instructor.

G 460/560 Geology of Mineral and Energy Resources (3)

Focus on the geology of mineral and energy resources in terms of their description, occurrence, origin, and distribution. Also consider extraction, treatment, uses, and reserves of mineral and energy resources; the historical, economic and social issues involved with certain resources; and the environmental implications of the use and exploitation of resources. Three hours of lecture per week. PREREQ: introductory geology course, or consent of instructor.

G 473/573 Environmental Geology (3)

The study of contemporary environmental issues as related to geologic systems. Topics include geologic hazards, land use, groundwater-surface water-soil contamination, remediation technologies, environmental planning, habitat restoration, applied analytical techniques, and

consulting practice. Two hours of lecture and two hours of laboratory per week. Supplemental field trips will be incorporated as needed. PREREQ: G 201, G 202, or consent of instructor.

G 476/576 Hydrology (3)

Investigation of near-surface hydrologic systems of the Earth. Topics include the hydrologic cycle, water budgets, introductory fluid dynamics, groundwater systems, watershed analysis, water quality, and water resource evaluation. One combined three hour lecture-lab period per week. Supplemental field trips will be incorporated as needed. Offered in alternating years. PREREQ: G 201, G 202, or consent of instructor.

G 492/592 GIS Applications in Earth Science (3)

Focus on the application of Geographic Information Systems to relevant problems in the Earth Sciences. Emphasis is placed on the use of computer technology in analyzing spatial and temporal relationships of geologic systems. Students will learn techniques in digital map compilation, digital image processing, and analysis of complex data sets. One combined three hour lecture-lab period per week. Offered in alternating years. PREREQ: G 201 or G 202 and CS 161, or consent of instructor.

G 501M Research (1-15)

Terms and hours to be arranged.

G 503M Thesis or Field Study (3-9)

Terms and hours to be arranged.

G 506M Special Individual Studies (1-15 hours)

Terms and hours to be arranged.

G 555M Glacial Geology (3)

A study of glacial processes and products including those associated with alpine, continental and periglacial settings. Work with topographic maps, aerial photographs and examples of glaciation in the Pacific Northwest. Appropriate term paper or project required.

G 556M Geology of North America (3)

Study of the geologic structure, evolution and geomorphology of the North American continent. Two lectures and one two-hour laboratory. PREREQ: Consent of instructor. Offered summers only.

General Science

GS 104, 105, 106 Earth System Science (5 each)

This three-term sequence of courses integrates the critical concepts of chemistry, physics and geology in the context of the Earth as a system. GS 104: Focus on the Solar System, the processes driven by the interior of Earth, including plate tectonics, earthquakes, and volcanism, and introduction to study of Earth materials. GS 105: Focus on physical and chemical processes occurring at the surface of Earth with an emphasis on energy in the Earth system. GS 106: Focus on human impacts to the Earth system, including chemical and physical aspects of water pollution, oceanography, air pollution, meteorology, and global climate change. Not open to students who have taken more advanced course in the corresponding subject matter. All three courses require three hours of lecture and one two-hour laboratory per week. PREREQ: GS 104 is the prerequisite for GS 105 and GS 106.

GS 107 Seminar (1-3)**GS 114, 115, 116 Essentials of Physical Science (4 each)**

An examination of the basic scientific concepts underlying familiar physical phenomena; topics may include motion, energy, optics, electromagnetism, nature of matter, atomic theory, chemical bonding, and chemical reactions. Three lectures and one laboratory period per week. PREREQ: MTH 111

GS 161 Technical Photography (2)

For students interested in the scientific applications of photography. Students will gain experience with 35 mm, polaroid and digital cameras. Particular attention will be focused on forensic and environmental applications. One lecture and one laboratory period. PREREQ: Consent of instructor.

GS 201H, 202H, 203H Natural Science: The Search for Order (4 each)

A study of major themes from the natural sciences selected to develop understanding of historical perspectives, current interactions and future potentials of earth, physical and biological sciences.

GS 311 Biological Science for Elementary Schools (3)

Concepts, experiences and materials from the biological sciences adaptable to the elementary school. Lecture and laboratory combined in two 3-hour sessions. PREREQ: Introductory biology course or consent of instructor.

GS 312 Physical Science for Elementary Schools (3)

Concepts, experiences and materials from the physical sciences adaptable to the elementary school. One lecture, two 2-hour laboratories.

GS 313 Earth Science for Elementary Schools (3)

Concepts, experiences and materials from the earth sciences adaptable to the elementary school. One lecture, two 2-hour laboratories.

GS 314 Classroom & Laboratory Resources in Science (2)

Presents techniques for the preparation, handling, storage and disposal of laboratory materials. Topics may include laboratory safety regulations, selection of appropriate student laboratory activities, utilization of on-line and reference resources for selection of classroom and laboratory materials and basic instrument maintenance. Two 3-hour labs a week. PREREQ: CH 223, MTH 112, BI 213.

GS 321 Musical Acoustics (4)

An integrated lecture-demonstration-laboratory approach to the nature of sound and music with direct student involvement. Topics to include the nature and perception of sound, acoustical characteristics of music instruments, applications of electronics, and architectural acoustics. Three lectures and one two-hour laboratory. PREREQ: MTH 105 or equivalent.

GS 331 Introduction to Oceanography (3)

A study of the nature of sea water and the physical, chemical and geologic processes acting within the oceans. One three-hour lecture.

GS 342 Coastal Oceanography (3)

Coastal oceanography of Oregon is studied in detail with emphasis on circulation in estuaries, the tides and coastal erosion and deposition. Students will undertake supervised research projects. Three lectures and weekend field trips. PREREQ: GS 104 or GS 331.

GS 351 Elements of Astronomy (3)

A study of the structure and evolution of the universe from an observational perspective. Topics to include the night sky, observational techniques, the solar system, stellar and galactic structure, and cosmology. One three-hour lecture. PREREQ: MTH 105 or equivalent.

GS 361 Energy and Resources in Perspective (3)

A study of the current development and utilization of energy and power, implications of the finite resources, impact on the environment and alternatives. Three lectures.

GS 390 Basic Meteorology (3)

An introductory study of weather elements, their observation, measurement and use in forecasting. Includes a study of the atmosphere, its makeup, energy relationship and circulation. One three-hour lecture.

GS 401 Research (1-15)

Terms and hours to be arranged.

GS 406 Special Individual Studies (1-15)

Terms and hours to be arranged.

GS 407/507 Seminar (1-15)

Terms and hours to be arranged.

GS 408 Workshop (1-15)

Terms and hours to be arranged.

GS 409 Practicum (1-9)

Provides the preprofessional experience desired by such professional schools as medicine and physical therapy.

GS 411/511 History of Science (3)

A brief history of the development of the natural sciences up to the 19th century, their social implications, and the growth of scientific philosophy. Three lectures. PREREQ: Two sequences in natural sciences or mathematics or consent of instructor.

GS 420 Selected Field Investigations (1-6)

Field expeditions to unique geological and/or biological areas of western North America. In these undertakings, the students will plan and undertake studies of the areas selected for exploration.

GS 424/524 Astronomy (3)

A study of the solar system, stars, stellar systems, and galaxies including the application of some of the important concepts of physics, chemistry and mathematics to the field of astronomy. Three lectures. PREREQ: one year each of college physical science and mathematics.

GS 501M Research (1-15)

Terms and hours to be arranged.

GS 502M Independent Study (1-15)

Terms and hours to be arranged.

GS 503M Thesis or Field Study (3-9)**GS 506M Special Individual Studies (1-15)**

Terms and hours to be arranged.

GS 507M Seminar (1-15)

Terms and hours to be arranged.

GS 508M Workshop (1-15)

Terms and hours to be arranged.

GS 512M History of Science (3)

Intensive study of the history of one particular branch of the natural sciences with emphasis on the modern period. Usually offered by arrangement with a staff member in that branch. PREREQ: GS 411 or consent of instructor.

GS 525M A Concept Approach to Science (3)

This course will identify basic concepts common to all disciplines of science, explain their various applications to individual sciences, and expand their application beyond science to a global, interdisciplinary understanding of the concepts.

GS 591M Physical Oceanography for Teachers (3)

Physical processes in the oceans; the origin and distribution of water masses and currents; waves, tides, tidal currents. PREREQ: chemistry or permission of the instructor.

GS 592M Geological Oceanography for Teachers (3)

The topographic, geologic and geophysical nature of the ocean basins; processes of and distribution of sediments and economic deposits, coastal erosion and sedimentation.

Geography

GEOG 105, 106, 107 Introductory Geography (3 each)

105— Introductory Physical Geography.

106— Introductory Economic Geography.

107— Introductory Cultural Geography.

GEOG 199 Special Studies (1-6)

Terms and hours to be arranged. A means by which students may earn lower-division credit for research, writing, mapping, discussion, career-related, and/or participatory skills.