

Geology and Geography

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Degrees Offered

Bachelor of Arts

Majors: Geography, Environmental Geoscience

Bachelor of Science

Major: Geology

Geology

The bachelor of science degree is designed for students interested in geology positions within either the private or public sector, as well as for students who will pursue graduate work. Qualified students are encouraged to seek a graduate degree; however B.S. geologists who have developed solid technical and communication skills have excellent employment prospects in the energy industry and environmental and geotechnical firms.

Candidates for the bachelor of science are required to take a total of 40 hours of geology courses. Students are urged to take supporting courses in such fields as geography, mining and petroleum engineering, hydrology, soil mechanics, soil science, biology, and computer science, depending on their primary interest within geology. Students planning to attend graduate school in geology or seek employment in the energy industry should complete a full year of calculus.

Instructional facilities and equipment include laboratories for mineralogy, petrology, geochemistry, sedimentology, paleontology, hydrogeology, geophysics, geomorphology, mineral and fuel resources, and structural geology. Field studies are stressed in upper-level classes, capped by a six-credit field course examining folded and faulted sedimentary rocks as well as igneous and metamorphic rocks in South Dakota, Wyoming, and Montana. Other recent field classes have focused on stratigraphy in Spain and Ireland and the geomorphology, structural geology, and petrology of the American and Canadian Rockies. A wide variety of resources are available to augment classroom learning, including cooperative research programs with the West Virginia Geological and Economic Survey, the National Energy Technology Laboratories of the U.S. Department of Energy, the West Virginia Department of Natural Resources, Monongahela National Forest, and numerous private geoscience firms. Internships are encouraged to broaden the learning experience and to enhance employment prospects.

Bachelor of Science Requirements

A total of 128 hours is required including 40 hours of geology courses (excluding GEOL 203 and 351).

Required Courses for a B.S. with a major in geology: GEOL 101, 102, or 110, 111 (or GEOG 110, 111), 103, 104, 284, 285, 311*, 321, 331, or 454, 341, 404, 463, and five hours of upper-division geology electives; CHEM 111 and 112, or 115 and 116; PHYS 101 and 102, or 111 and 112; STAT 211; MATH 126 and 128; MATH 155 and GEOL 351, or MATH 155 and 156.

Recommended electives: GEOL 455, 470, 472, 473; GEOG 205, 207, 350, 452, 455; CS 101; AGRN 202 and 203; additional biology, chemistry, physics, soil science, or mathematics courses.

An average of at least 2.0 must be attained in required upper-division geology courses.

*Used to fulfill the college writing course requirement.

Admission Requirements

Admission to the program requires at least a cumulative GPA of 2.0 and an average of at least 2.0 in lower-division geology courses.

Minor in Geology

Anyone interested in a geology minor is urged to contact the department.

Requirements for the minor: sixteen hours of geology courses including GEOL 101 and 102, or GEOL 110 and 111 are required. Nine hours must be upper division. Students must achieve a grade point average of at least 2.0 in all geology courses. Courses graded P/F may not be applied toward the geology minor.

Environmental Geoscience Bachelor of Arts

The B.A. in environmental geoscience is a joint program in the Department of Geology and Geography for students interested in geological and geographical approaches to environmental issues. Emphasis is placed on the physical, human, and spatial aspects of Earth and its environment. The broad and interdisciplinary nature of the degree program is designed to produce geoscientists who can identify environmental problems, apply a variety of approaches to their remediation, and be conversant among the wide range of disciplines for whom the environment is of special concern.

The course requirements for the degree reflect the diversity of environmental problems that we face today from the atmosphere (air pollution), to the hydrosphere (water pollution), to the lithosphere (ground pollution), and how these problems affect our quality of life. The courses required for the degree also reflect the increased demands placed upon modern environmental scientists that include being able to recognize and understand the sources and impacts of various pollutants within the physical environment, being able to compile and analyze environmental data, understanding the regulatory aspects of environmental protection, and being able to effectively communicate issues of importance with other environmental scientists and with the general public.

Graduates of this program will find employment in a wide array of fields including the assessment and remediation of environmental problems, land-use planning, geographic information systems, involvement in the legislative process by which laws are formulated to protect the environment, the application of such laws as part of a federal or state regulatory agency, or as a member of the journalistic community using the various methods of mass communication to increase the public awareness of situations that adversely affect the environment.

Geology and Geography Courses

The program requires a total of 128 hours for graduation. A minimum of 38 hours must be taken from the following list of geology and geography courses including the 23 required hours plus a minimum of 15 hours at the 200, 300, or 400 level selected from the elective list. One of the geology/geography elective courses must be a designated "methods" course. No more than 50 hours of geology/geography courses can be used for the B.A.

The selection of courses from the following lists are designed to provide competence within four important areas of understanding required for an environmental geoscientist: (1) a firm understanding of the physical makeup of the environment including the atmosphere, the hydrosphere, and the lithosphere, (2) a familiarity with the tools with which the environment can be described and evaluated, (3) an understanding of how humans have impacted the environment, and (4) the steps that can be taken to protect the environment and, if already adversely affected, what can be done to ameliorate the problem.

Required Courses (23 hours) GEOL/GEOG 110, 111 (or GEOL 101, 102), 103, 104, 200, 400*; GEOG 106, 107, 307.

Elective Geology and Geography Courses (15 hours) GEOG 150, 205, 207, 300#, 305, 350#, 407#, 415, 453, GEOL/GEOG 201, 321, 452, 455#. GEOL 203, 365, 463, 484, 488.

Required Courses Outside the Department (14 hours) CHEM 111, 112, or 115, 116 or CHEM 111 and PHYS 105; MATH 126, 128.

*Used to fulfill the college writing course requirement.

#Methods courses.

Electives Non-Geology/Geography (12 hours) ARE 187, 220, 382; AGRN 202, 203, 455; BIOL 101, 102, 103, 104, (or 115, 117), 105, 106; CHEM 231; CS 101, 110; FMAN 212; HIST 284; MATH 150, 155[^]; POLS 338; STAT 211, 312.

[^]Credit cannot be obtained for both MATH 150 and MATH 155.

Geography

Nature of Program

The undergraduate major in geography provides students with the knowledge and skills needed to analyze the variation in human activity that exists among places, regions, and countries. This knowledge allows geographers, for example, to explain why some places are more or less developed than others, to suggest ways in which development can be planned, and to examine the relationship between the natural environment and human activities.

Geography students receive specialized training in one of the program's four options: geographic information science (GIS), planning and development, natural resources and environment, and international area studies. An individualized program of study is also available combining elements of the four options. Geography graduates are qualified for a number of careers in both the private and public sectors. In industry, geographers are hired as geographic information system analysts, business location researchers, environmental impact consultants, market analysts, and cartographers. In government, geographers can work as local urban planners, regional and state economic development specialists, environmental and resource development analysts, land-use planners, international development agency advisors, teachers and trainers, researchers, cartographers, as well as geographic information system analysts. Some graduates may also use their training to pursue careers as environmental or community activists in non-profit organizations. Finally, many geography students go on to graduate school to obtain further training, most commonly in geography or planning, but also in fields as diverse as law, information science, and environmental studies.

Admission and Degree Requirements

Admission to the geography program requires a cumulative grade point average of at least 2.0 and an average of at least 2.0 in geography courses. A geography major requires a total of 128 hours, including 33 hours of geography courses.

Core requirements (14 hours) GEOG 102 *World Regions*, 106 *Physical Lab* and 107 *Physical*, 108 *Human*, 199 *Orientation*, and 240 *U.S. and Canada*.

Core elective requirements (3 hours) 205 *Natural Resources*, 209 *Economic Geography*, 210 *Urban Geography*.

Methods and applications (3 or 4 hours) 350 *Introduction to GIS*, 462 *Digital Cartography*, 455 *Remote Sensing*, 407 *Environmental Field Geography*.

Capstone Course (3 hours) 491 *Professional Field Experience*, 495 *Independent Study*, 496 *Senior Thesis*, 499 *Honors Thesis*.

Areas of Emphasis

Geographic Information Science (GIS)

This option provides a foundation in the theory and practice of geographic data handling, emphasizing the use of computer systems for storing, retrieving, analyzing, and displaying spatial information. Geographical analysis of human and natural environments generates information for decision-makers in business, government, and educational settings using contemporary technology such as geographic information science (GIS), image processing of remotely sensed data, and geographical models. The GIS option provides instruction in the capture of data from field survey, aerial photography, satellite imagery, and other digital sources. The significance of spatial patterns and processes are understood through mapping, computer-oriented techniques, and statistical applications. The department has state-of-the-art laboratories and computer software for practical training and education in GIS and remote sensing.

Recommended Courses GEOG 150, 300, 361, 362, 415, 452, 453, and 455. Suggested courses in other disciplines: FOR 140, 326; MATH 155, 156, 251, 261; STAT 211, 215, 312, 331, 421, 445; CS 101, 110, 111, 220, 210, 330, 415, 440, 470; HIST 284; ART 111, 112, 223; IMSE 350; CE 200, 205, 405; PHYS 108.

Natural Resources and Environment

A rapidly expanding interest in the environment and sustainable development has put geographers in a good position to analyze the destruction of, and measures to maintain, environmental systems. This option emphasizes the interaction between natural resources, the physical environment, and economic development in developed and developing regions. It provides training for students interested in problems concerning the conservation of natural resources, environmental impact and economic development, and strategies for sustainable resource utilization. Geographical information science, remote sensing, and cartographic training is available for analyzing environmental problems resulting from the exploitation and management of energy, mineral, land, and water resources. Theoretical issues concerning political ecology are also provided.

Recommended Courses GEOG 110 and 111, 300, 307, 321, 407, 411, 415, 455, 491. Suggested courses in other disciplines: GEOL 101, 102, 103, 104; BIOL 363; CHEM 111, 112; CE 200; ENGL 305; FOR 140, 326; HIST 284; MATH 128; POLS 336, 338; STAT 101; CS 101.

Planning and Development

The development and planning option emphasizes rural, urban, and regional development in the United States, Africa, and Europe. Theoretical and practical issues in the study of development and underdevelopment are raised within the suggested courses. The planning focus within this option prepares students to participate in the social processes that influence contemporary urban and regional development. The training provided in this track will equip students with a background for careers or advanced study in economic development, sustainable development and policy, third world planning, urban social planning, gender studies, rural planning, and policy formation. Students are exposed to issues such as social equity vs. efficiency, new Urbanist planning techniques, community development, uneven development, gentrification and urban revitalization, and gender studies. In addition, students are strongly encouraged to participate in the internship program to gain practical experience in planning and regional development. Recommended courses include, but are not limited to: GEOG 209, 210, 411, 412, 425, 491, and a regional course from any of the following 240, 241, or 243. Suggested courses in other disciplines: ECON 461; 462; POLS 220; SOCA 322, 323, and 405.

International Area Studies

The international arena has changed dramatically in recent decades with political transitions, economic restructuring, and social upheaval. Geography plays an important role in analyzing these global shifts. The international area studies option gives students the opportunity to specialize in one or more regions of the world and gain a basic background in international economic, political, and cultural relationships. The program not only deals with specific regional problems, but also global issues, nationalism, development, the international division of labor, and gender issues. The program has particular expertise in western and southern Africa, East Asia, and Europe. Recommended courses: GEOG 241, 243, 244, 302, 310, 412, 415, 491. Suggested courses in other disciplines: ECON 201, 202, 451, 454, 455; ENGL 305; HIST 104, 105, 106, 464; POLS 103, 250, 260, 361, 364; SOCA 255, 256; MDS 126.

Individualized Program of Study

With the approval of the undergraduate coordinator, a student may design an individualized program of study consisting of a minimum of 33 hours of geography courses. The individualized program is arranged with the student's advisor. It shall comprise no more than six hours of Geography 491 and 492.

Internship

An internship is a field-based academic option that uses the workplace as an extended classroom/laboratory. As part of the internship, students usually spend summer months or a semester working at a public agency, private business, or non-profit organization where they are supervised by experts in such areas as GIS, planning, the physical environment, international affairs, or economic development. The professional learning experience is recommended for majors in geography with at least 45 total credit hours and 12 credit hours in geography. See the geography internship advisor for additional information.

Geography Minor

Any student admitted to a degree program at WVU may complete a minor in geography. The minor consists of 15 hours of coursework with a minimum of nine hours at upper division level (course number 300 or above). The geography minor is available in five areas: geographic information science (GIS), planning and development, natural resources and environment, international area studies, and an individualized program. Students must achieve a GPA of at least 2.0 in the 15 hours taken for the geography minor. Requirements include GEOG 102 or 108, 107, and nine additional hours in courses related to the student's specific area.

Honors Program

Qualified students in geography are encouraged to participate in the department's honors program, which begins in the senior year and culminates in an individual senior thesis. Entry requires a 3.3 overall GPA.

History

Robert E. Blobaum, Chair

Steven M. Zdatny, Associate Chair and Director of Graduate Studies

William S. Arnett, Director of Undergraduate Studies

Katherine Aaslestad, Phi Alpha Theta Advisor

Elizabeth Fones-Wolf, Curriculum Coordinator

Degree Offered

Bachelor of Arts

Program Objectives and Goals

The Department of History offers courses focusing on a variety of world regions and time periods. Degree requirements insure that majors obtain an acquaintance with the history of several such regions and periods and that they develop skills in research and writing. Majors and non-majors may qualify for membership in Phi Alpha Theta, the national history honorary.

Admission Requirements

Students who meet University admission requirements and are in good standing may be directly admitted to the history major.

Major Requirements

- History majors must complete a total of 33 hours in history courses. They must choose 12 hours from the following introductory courses: HIST 101, 102, 104, 105, 106, 108, 152, 153, 179, 180, 271, and 272. They must complete History 494 and 18 additional hours beyond the introductory courses with nine hours each from two of the following three areas: United States; Europe; Africa, Asia, and Latin America. At least nine of the 18 hours must be at the 300 and 400 level. One course must be taken in African, Asian, or Latin American history.
- History majors must complete a formal minor of at least 15 hours in a related field outside history but within the Eberly College of Arts and Sciences. With approval of the student's advisor, a minor outside the college may be offered as prescribed by that department or college.