



Jones Hall

Geology

Geology is the study of the earth – from its largely inaccessible interior to the familiar surface on which we live and from which we draw natural resources. Through professional and research careers, geologists make observations, measurements, and interpretations of a wide variety of geological phenomena, ranging from exploring new energy resources and protecting the environment to studying fossils, earthquakes, and volcanic eruptions.

Employment Opportunities

As a geologist, you will have opportunities to explore and develop new water, mineral, and energy resources and to preserve the quality of the environment for future generations. Geologists specialize in a number of areas including:

- **environmental assessment**—studying and evaluating the impact of particular land-use projects on the surrounding environment
- **geochemistry**—the chemistry of rocks, minerals, petroleum and natural gases, and water through the study of naturally occurring materials, their distribution and abundance
- **hydrogeology**—the science that deals with underground waters and related aspects of surface waters
- **geophysics**—the study of Earth using quantitative physical methods
- **petroleum geology**—the branch of geology that involves the study of petroleum, including discovery of oil deposits
- **mineral prospecting**—the branch of geology that deals with discovery of mineral deposits of economic value
- **engineering geology**—geology as applied to engineering practices, especially mining and civil engineering

With a degree in geology, you might seek a career in the energy industry, civil engineering firms, the mining industry, state and federal environmental protection agen-

cies, government geological surveys, geological research institutions, and private consulting firms. Because of the specialized nature of much of the work, however, a graduate degree is often necessary. But geology and earth-science majors should be encouraged by the longstanding shortage of trained geologists to fill available positions, and you can usually combine a career and graduate study to enhance your career possibilities.

Professional geologists command wages and salaries equivalent to or better than those paid in other scientific and engineering professions. Geology careers also provide opportunities to travel and relocate to interesting parts of the world.

Degree Options

To prepare geology students for demanding and exciting professional careers and graduate study, the Department of Geological and Environmental Sciences at Youngstown State University offers degree programs in geology and earth science.

The course of study in these programs is fairly rigorous because in addition to mastering the concepts and principles of geology, a successful geologist must also have a comprehensive understanding of physics, chemistry, mathematics, and/or biology for everyday work.

Faculty

YSU maintains a faculty-student ratio of 1:19, among the best of state-affiliated universities in Ohio.

The Department of Geological and Environmental Sciences faculty offers a wide range of geological expertise gained from research, professional employment, and private consulting. This background uniquely qualifies the faculty to instruct and assist students at all levels of University study. In addition, a low faculty-student ratio of about 1:15 in most geology courses provides students with personalized instruction.

Isam E. Amin, Associate Professor, Ph.D., University of Nevada-Reno, 1987.

Specialization: hydrogeology, environmental geochemistry, and environmental geology.

Joseph E. Andrew, Assistant Professor, Ph.D., University of Kansas, 2002.

Specialization: structural geology and economic geology.

Felicia P. Armstrong, Assistant Professor, Ph.D., Oklahoma State University, 2003.

Specialization: environmental chemistry of soils, ecotoxicology, and soils remediation.

Raymond E. Beiersdorfer, Professor, Ph.D., University of California-Davis, 1992.

Specialization: environmental geochemistry, metamorphic and igneous petrology, tectonics, and environmental geology.

Jeffrey C. Dick, Associate Professor, Ph.D., Kent State University, 1992.

Specialization: engineering geology, hydrogeology, geophysics, and petroleum geology.

Alan M. Jacobs, Professor and Chair, Ph.D., Indiana University, 1967.

Specialization: engineering and environmental geology, surficial geology, and hazardous waste management.

Shane V. Smith, Assistant Professor, Ph.D., Washington State University, 2005.

Specialization: stratigraphy and sedimentology.

Ann G. Harris, Professor Emeritus, M.S., Miami University, 1958.

Specialization: life of the past, environmental geology, national parks.

Ikram Khawaja, Professor Emeritus and Interim Dean, Ph.D., Indiana University, 1969.

Specialization: coal geology and economic geology.

Charles R. Singler, Professor Emeritus, Ph.D., University of Nebraska, 1969.

Specialization: stratigraphy, sedimentology, structural geology, and oceanography.

Facilities

The Department of Geological and Environmental Sciences is housed in modern facilities within Moser Hall. In addition to conventional geological field and laboratory equipment, the Department has modern specialty facilities and equipment including: rock preparation, computer, x-ray, chemistry and microscopy laboratories; stream monitoring equipment; geophysical instruments; sedimentology equipment; and soil sampling and analysis equipment.

Outside the Classroom

Many geology courses include local and long-distance field trips. The geology field-camp course (required in the Bachelor of Science degree program) is usually conducted over a four-to-six-week period during the summer in the western United States.

Students may join the Youngstown State Geological Society (YSGS), which conducts a number of student field trips and provides a forum for friendship, discussion, and exchange of ideas.

Scholarships, Awards, and Financial Aid

The Youngstown State University Department of GES awards several scholarships to help defray summer field camp costs, to apply toward tuition, or for academic excellence. The Department also employs a number of qualified students as laboratory and department assistants and as staff for the Clarence R. Smith Mineral Museum.

Curriculum Overview

For the Bachelor of Science degree:

Required courses

- Physical Geology
- Physical Evolution of North America
- Life of the Past
- Mineralogy
- Geomorphology
- Structural Geology and Lab
- Igneous & Metamorphic Petrology
- Sedimentology & Stratigraphy
- Field Camp

Geology electives

- Introduction to Oceanography
- Geology & the Environment I, II
- Glacial Geology
- Geology of Economic Mineral Deposits

(see following page)



To obtain the Undergraduate Admissions and Financial Aid Application and/or a copy of the current Undergraduate Bulletin, please contact the Office of Admissions at:

Telephone: (877) 468-6978 330-941-2000 TDD: 330-941-1564 Fax: 330-941-3674 E-mail: enroll@ysu.edu

The Office of Admissions is open Monday and Thursday, 8:00 a.m. to 6:00 p.m., and Tuesday, Wednesday, and Friday, 8 a.m. to 5 p.m. The Office is also open every other Saturday from 9 a.m. to noon, except on holiday weekends and during term breaks

Subsurface Investigations
 Principles of Paleontology
 Environmental Impact of Abandoned Mines
 Ground Water
 Environmental Geochemistry

Required science courses

General Chemistry 1, 2
 Calculus 1, 2 or Calculus I/Statistical Methods
 Fundamentals of Physics 1, 2
 Fundamentals of Physics Lab 1, 2 or
 General Physics 1, 2
 General Physics Lab 1, 2

For the Bachelor of Arts degree:

Required courses

Physical Geology
 Physical Evolution of North America
 Life of the Past
 Mineralogy
 Geomorphology
 Applied Calculus or Calculus I or Statistical Methods
 Science Electives

Science electives

Introduction to Oceanography
 Geology & the Environment I
 General Chemistry 1, 2

Fundamentals of Physics 1, 2
 Principles of Biology I, II
 Moon & Planets
 Weather
 Soils and Land Use
 Foundations of Environmental Studies

Geoscience option

Igneous & Metamorphic Petrology
 Structural Geology/Lab
 Sedimentology & Stratigraphy
 Upper-Division Geology Courses

Environmental option

Geology of Economic Mineral Deposits
 Subsurface Investigations
 Ground Water
 Upper-Division Geology Courses

For more information about this program, go to

<http://www.as.ysu.edu/~geology/>



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