

Bachelor of Arts or Bachelor of Science Geological Sciences

INFORMATION

Geological Sciences (Geology) majors learn basic concepts and facts about the composition, structure and history of the earth. Geologists also receive training in current laboratory skills. Geologists analyze earth components, including rock formations, minerals, volcanoes, fossils, sediments, subsurface layers, glaciers and more. Geologists search for and develop natural resources, including groundwater, minerals, petroleum, coal and gas. Geologists use remote sensing satellite data and advanced image processing to map various types of habitat and vegetation, to monitor urban sprawl, to study ocean variables such as currents, chlorophyll concentrations, temperature, wave heights and surface winds, to study coastal regions, monitoring erosion and sediment transport, as well as mapping vegetation; and to monitor damage from natural hazards such as hurricanes and earthquakes. Geologists use seismographic instruments and drilling to study subsurface earth layers and use seismometers to measure earthquake intensity and locations. Geologists use instruments to study the earth's gravity and magnetic field. Geologists conduct geological surveys and construct field maps. Geologists work in construction projects, particularly dams and tunnels. Geologists are also in great demand as environmental scientists, working in various positions to preserve and clean up the environment, as well as in geological-specific jobs such as assessing environmental impact in mining and excavating. Hydrogeology is a high-demand

subspecialty in geology involving studying and managing various aspects of groundwater.

CAREER OPPORTUNITIES

Graduates are employed in a variety of jobs, including field work for natural resource companies (oil, minerals, gas); environmental scientist positions, particularly (but not limited to) the areas of water resources, soil characterization, bore hole studies, well installation, mining and excavation; research work in industry and federal agencies; work in state geological surveys; work in major construction projects and teaching.

Bachelor graduates can obtain entry-level positions, teach science/earth science in high school (licensure required), and work in a wide variety of fields related to geology. A master's degree, however, is required for many geology positions, in order to obtain necessary specialization and work in research. Doctoral (Ph.D.) graduates assume university faculty positions teaching and directing research, direct research in government labs, or work in high-level positions in industry.

PROGRAMS

BACHELOR OF SCIENCE (B.S.) IN GEOLOGICAL SCIENCES:

Recommended for students wishing to go on to graduate school in the sciences or engineering and whose career directions are primarily technical or scientific. The B.S. degree requires several more courses in geology and calculus than the B.A. degree.

BACHELOR OF ARTS (B.A.) IN GEOLOGICAL SCIENCES:

Recommended for students pursuing careers in teaching, law, planning or business.

Secondary Teacher Licensure

Track: Available for students interested in earth science/science high school teaching. Contact the geology advisor for the science course requirements and the Education Student Service Center for the needed education courses.

Engaged learning experiences include a state-of-the-art remote sensing laboratory, performing sophisticated analysis of satellite data; field geology courses to Cleveland-area geological sites; research with nationally recognized Cleveland State University faculty; and co-op and internship opportunities. Most courses are taught by doctoral faculty. A geological sciences minor requires 17 credit hours of specified courses. Student can also become involved in the Biology, Geology, Environmental Science Student Association or the Student Environmental Movement. Some of the courses are offered in the evenings. All students receive individual advising.

For more information, contact: College of Science

Department of Biological,
Geological and Environmental
Sciences
Cleveland State University
2121 Euclid Avenue SI 219
Cleveland, OH 44115-2214
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<http://www.csuohio.edu/sciences/dept/biology/index.html>

Bachelor of Arts or Bachelor of Science

Geological Sciences

Requirements of the College of Science: A minimum of 128 credit hours is required for a Bachelor of Science (B.S.) or a Bachelor of Arts (B.A.) degree, of which 42 semester credit hours must be earned in 300- and/or 400-level courses. Introduction to University Life (one credit hour) is required for all newly admitted freshmen (not required for transfer students).

General Education Requirements: All degree-seeking students are required to meet general education requirements. Students are responsible for ensuring that courses chosen satisfy these requirements and are encouraged to consult with their academic advisor. A comprehensive description of the requirements is available online at <http://www.csuohio.edu/academic/gened/>.

Courses required for the B.S. in Geological Sciences (credit hours in parentheses):

A grade of C is the minimum passing grade for all required major courses offered by the department.

Required Science Core Courses:

CHM 261/266 General Chemistry I and Lab (5)
CHM 262/267 (or 278) General Chemistry II and Lab (5)
GEO 100/101 Introductory Geology and Lab (4)
GEO 323 Geospatial Concepts and Tools (3)
MTH 181 Calculus I (4)
MTH 182 Calculus II (4)
PHY 221 or 241 College or University Physics I (5)
PHY 222 or 242 College or University Physics II (5)
GEO 499 Exit Evaluation (0)

ONE Capstone Course from the Following:

GEO 451 Field Geology (minimum 4 credits)
GEO 490 Internship in Geology (minimum 3 credits)
GEO 496 Independent Study in Geology (minimum 3 credits)
GEO 497 Research in Geology (minimum 3 credits)
EST 492 Student Teaching (minimum 3 credits)

GEO/EVS Electives (28 credit hours required):

GEO 150/151 Geological History of the Earth (4)
GEO 202/203 Principles of Paleontology and Lab (5)
EVS 206 Introduction to Environmental Science (4)
GEO 230 Natural Resources (3)
GEO 304/305 Mineralogy and Lab (4)
GEO 306/307 Petrology and Lab (4)
GEO 312/313 Sedimentation and Stratigraphy and Lab (4)
GEO 320/321 Structural Geology and Lab (4)
GEO 354 Geochemistry (4)
GEO 425 Introduction to Geographic Information Systems and Remote Sensing (4)
GEO 427 Advanced Topics in Remote Sensing and GIS (4)
GEO 444/445 Hydrogeology and Lab (4)
GEO 451 Field Geology (minimum 4 credits)
GEO 460 Geomorphology (4)

Courses required for the B.A. in Geological Sciences:

Required Science Core Courses:

Same courses required as listed in the B.S. in Geological Sciences Core Courses EXCEPT:
The MTH 151-156 series (Mathematical Concepts, six credit hours required) can be substituted for MTH 181/182 Calculus I and II

ONE Capstone Course:

Same choice of capstone courses as listed for B.S. degree (above)

GEO/EVS Electives (20 credit hours required):

Same elective choices as listed for B.S. degree (above)

June 2009