BACHELOR OF SCIENCE IN GEOLOGY

Geology exists as a science to satisfy the needs of modern society for earth's abundant natural resources and to ensure sustainable practices for future generations. The Department of Geological and Environmental Sciences offers two different geology degrees; the Bachelor of Arts and the Bachelor of Science. Both programs prepare graduates for employment, however the Bachelor of Science is considered the flagship degree as its more rigorous curriculum provides significant employment advantages and prepares graduates for admission to Master of Science and Doctor of Philosophy (PhD) programs. The dominant fields of employment include:

- Engineering geology
- Water resources
- Construction
- Hydrogeology
- Petroleum geology
- Environmental geology
- Geophysics
- Mining
- Government regulation and compliance work
- Employment related to the energy industry

The Bachelor of Arts and the Bachelor of Science degrees in Geology can be completed in eight semesters if students average 16 hours of coursework per semester.

For more information, visit the Department of Geological and Environmental Sciences (https://catalog.ysu.edu/undergraduate/colleges-programs/college-science-technology-engineering-mathematics/department-geological-environmental-sciences)

The Bachelor of Science degree requires the successful completion of a minimum of 74 s.h. of core and elective courses. These courses include a Geology capstone experience of Geology Field Camp which is normally completed during summer following the junior year. Alternatively, students may opt for an internship (STEM 4890 STEM Internship) experience or a Senior Thesis research experience (GEOL 4830 Senior Thesis).

COURSE | TITLE | S.H.
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**General Education Requirements** | | 12
Core Competencies | | 
ENGL 1550 | Writing 1 | 4
ENGL 1551 | Writing 2 | 4
CMST 1545 | Communication Foundations | 4
Mathematics Requirement | | 
Arts and Humanities | | 6
Natural Science | | 6
Social Science | | 6
Social and Personal Awareness | | 6
General Education Elective / First Year Experience | | 3
**Major Requirements** | | 
GEOL 1505 | Physical Geology & Physical Geology Laboratory | 4
ENST 2600 | Foundations of Environmental Studies & Foundations of Environmental Studies Laboratory | 4
GEOL 2605 | Historical Geology | 4
GEOL 3700 | Mineralogy | 4
GEOL 3701 | Geomorphology | 3
GEOL 3704 | Structural Geology & Structural Geology Laboratory | 3
GEOL 3718 | Igneous and Metamorphic Petrology | 4
GEOL 3750 | Geoscience Seminar | 1
(GEOG 5810) | Environmental Geography | 3
(GEOG 5810) | Geographic Information Science 1 | 3
**Capstone Experience** | | 
Select one of the following: | | 4
GEOL 48XX Field Camp (4 s.h. minimum) | | 
STEM 4890 | STEM Internship (4 s.h. maximum) | | 
GEOL 4830 | Senior Thesis | | 
**Electives** | | 
Select a minimum 8 s.h. of Geology courses, 12 s.h. total: | | 12
ENST 3700 | Environmental Chemistry & Environmental Chemistry Lab | | 
GEOL 3702 | Glacial Geology | | 
GEOL 3706 | Geology of Economic Mineral Deposits | | 
GEOL 3709 | Subsurface Investigations | | 
GEOL 3714 | Principles of Paleontology | | 
GEOL 3716 | Environmental Impact of Abandoned Mines | | 
ENST 3751 | Water Quality Analysis & Water Quality Analysis Lab | | 
GEOL 3720 | Field Investigations in Geology | | 
ENST 3780 | Environmental Research | | 
ENST 3781 | Environmental Sampling Methods | | 
GEOL 4804 | Ground Water | | 
GEOL 4824 | Tectonics | | 
GEOL 4825 | Geophysical Well Log Analysis | | 
GEOL 4899 | Special Topics | | 
GEOL 5805 | Special Problems in Geology | | 
ENST 5810 | Environmental Safety | | 
GEOL 5810 | Groundwater Resource Evaluation | | 
GEOG 5811 | Geographic Information Science 2 | | 
GEOL 5815 | Geology and the Environment 2 | | 
GEOL 5817 | Environmental Geochemistry | | 
ENST 5860 | Environmental Regulations | | 
**Ancillary Science Courses** | | 
Select 25-26 s.h. from the following: | | 25-26
CHEM 1515 | General Chemistry 1 & General Chemistry 1 Laboratory | | 
CHEM 1516 | General Chemistry 2 & General Chemistry 2 Laboratory | | 
MATH 1571 | Calculus 1 & MATH 1572 and Calculus 2 | | 
PHYS 1501 | Fundamentals of Physics 1 & Fundamentals of Physics Laboratory 1 | | 
PHYS 1502 | Fundamentals of Physics 2 & Fundamentals of Physics Laboratory 2 | | 
PHYS 2610 | General Physics 1 & General Physics laboratory 1 | | 
PHYS 2611 | General Physics 2 & General Physics Laboratory 2 | | 
Total Prescribed Semester Hours: 113-114 s.h.
### Year 1

**Fall**
- **GEOL 1505 & 1505L**: Physical Geology and Physical Geology Laboratory (S.H.: 4)
- **ENGL 1550**: Writing 1 (S.H.: 3)
- **CHEM 1515 & 1515L**: General Chemistry 1 and General Chemistry 1 Laboratory (S.H.: 4)
- **GER Arts and Humanities Elective**: 3
- **GEOL 3750**: Geoscience Seminar (Optional) (S.H.: 1)

Semester Hours: 15

**Spring**
- **GEOL 2605**: Historical Geology (S.H.: 4)
- **ENGL 1551**: Writing 2 (S.H.: 3)
- **CHEM 1516 & 1516L**: General Chemistry 2 and General Chemistry 2 Laboratory (S.H.: 4)
- **GEOG 2626**: World Geography (S.H.: 3)
- **GEOG 2611**: Geospatial Foundations (S.H.: 3)

Semester Hours: 17

**Semester Hours**: 15

**Total Semester Hours**: 119

### Learning Outcomes

The learning outcomes for the Bachelor of Science in Geology are as follows:

- Communicate effectively using the language, concepts, and models of geology in written, visual, and numerical formats.
- Properly apply the scientific method to research a geologic problem and formulate conclusions.
- Demonstrate ability to apply appropriate field- and laboratory-based methods (of acquiring, quantitatively and qualitatively analyzing, and interpreting geologic data and information).
- Demonstrate understanding of plate tectonics regarding the petrologic, stratigraphic, and structural evolution of continents and oceans.