

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 in Applied Geology degree requires the successful completion of a minimum of 91 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.
FIRST YEAR REQUIREMENT -STUDENT SUCCESS		
YSU 1500	Success Seminar	1-2
or SS 1500	Strong Start Success Seminar	
or HONR 1500	Intro to Honors	
General Education Requirements		
ENGL 1550	Writing 1	3-4
or ENGL 1549	Writing 1 with Support	
ENGL 1551	Writing 2	3
CMST 1545	Communication Foundations	3
Mathematics Requirement (met with MATH in major)		
Arts and Humanities (6 s.h.)		6
Natural Sciences (2 courses, 1 with lab) (6-7 s.h.) <small>Met with courses in the major</small>		
Social Science (6 s.h.)		6
Social and Personal Awareness (6 s.h.)		6
Major Requirements		
GEOL 1505	Physical Geology	4
ENST 2600 & 2600L	Foundations of Environmental Science and Foundations of Environmental Science Laboratory	4
GEOL 2605	Historical Geology	4

GEOL 2600	Geology in the Field	1
GEOG 2611	Geospatial Foundations	3
GEOL 3711	Mineralogy	3
GEOL 3717	Petrology	3
GEOL 3705	Structures and Landscapes	4
GEOL 3708	Geological Field Methods	2
GEOL 3750	Geoscience Seminar <small>must be taken twice in fall terms for a total of 2 hours</small>	2
GEOL 3755	Geological Research Methods and Data Analysis	3
GEOL 5802	Sedimentology and Stratigraphy	3
GEOG 3701	Introduction to Geographic Information Science	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 24 s.h. of Upper Division elective courses (at least 2 courses must be non GEOL):		24
ENST 3700 & 3700L	Environmental Chemistry and Environmental Chemistry Lab	
GEOL 3702	Glacial Geology	
GEOL 3706	Geology of Economic Mineral Deposits	
GEOL 3709	Subsurface Investigations	
GEOL 3710	Petroleum Geology of the Appalachian Basin	
GEOL 3714	Principles of Paleontology	
GEOL 3716		
ENST 3751 & 3751L	Water Quality Analysis and Water Quality Analysis Lab	
GEOL 3720	Field Investigations in Geology	
ENST 3780	Environmental Research	
ENST 3781	Environmental Sampling Methods	
GEOL 4804	Ground Water	
GEOL 4806	Engineering Geology	
GEOL 4812	GIS Applications to Geology	
GEOL 4824	Tectonics	
GEOL 4825	Geophysical Well Log Analysis	
GEOL 4899	Special Topics	
GEOL 5805	Special Problems in Geology	
GEOL 5808	Introduction to Energy Resources	
GEOL 5810	Groundwater Resource Evaluation	
ENST 5810	Environmental Safety	
GEOG 4801	Advanced Geographic Information Science	
GEOL 5815	Geology and the Environment 2	
GEOL 5817	Environmental Geochemistry	
ENST 5860	Environmental Regulations	
Ancillary Science Courses		
CHEM 1515 & 1515L	General Chemistry 1 and General Chemistry 1 Laboratory	4
CHEM 1516 & 1516L	General Chemistry 2 and General Chemistry 2 Laboratory	4
MATH 1570 or MATH 1571	Applied Calculus 1 Calculus 1	4
STAT 3717 or MATH 1572	Statistical Methods Calculus 2	4
PHYS 1501 & 1501L or PHYS 2610	Fundamentals of Physics 1 and Fundamentals of Physics Laboratory 1 General Physics 1	5

PHYS 1502 & 1502L or PHYS 2611	Fundamentals of Physics 2 and Fundamentals of Physics Laboratory 2 General Physics 2	4
Total Prescribed Semester Hours: 120-122 s.h.		

Total Semester Hours **120-122**

Year 1

Fall		S.H.
YSU 1500 or SS 1500	Success Seminar or Strong Start Success Seminar	1-2
GEOL 1505 & 1505L	Physical Geology and Physical Geology Laboratory	4
ENGL 1550 or ENGL 1549	Writing 1 or Writing 1 with Support	3-4
GEOL 2600	Geology in the Field	1
CHEM 1515 & 1515L	General Chemistry 1 and General Chemistry 1 Laboratory	4
Semester Hours		13-15

Spring

GEOL 2605	Historical Geology	4
ENGL 1551	Writing 2	3
GEOG 2626	World Geography	3
GEOG 2611	Geospatial Foundations	3
CHEM 1516 & 1516L	General Chemistry 2 and General Chemistry 2 Laboratory	4
Semester Hours		17

Year 2

Fall		
GEOL 3711	Mineralogy	3
GEOG 3701	Introduction to Geographic Information Science	3
MATH 1570	Applied Calculus 1	4
PHIL 1565	Critical Thinking	3
Upper Division Elective		3
Semester Hours		16

Spring

GEOL 3717	Petrology	3
STAT 3717	Statistical Methods	4
Upper Division Elective		3
ENST 2600 & 2600L	Foundations of Environmental Science and Foundations of Environmental Science Laboratory	4
CMST 1545	Communication Foundations	3
Semester Hours		17

Year 3

Fall		
GEOL 3708	Geological Field Methods	2
GEOL 3755	Geological Research Methods and Data Analysis	3
PHYS 1501 & 1501L	Fundamentals of Physics 1 and Fundamentals of Physics Laboratory 1	5
GEOL 3750	Geoscience Seminar	1
Upper Division Elective		3
PHIL 2625	Introduction to Professional Ethics	3
Semester Hours		17

Spring

PHYS 1502 & 1502L	Fundamentals of Physics 2 and Fundamentals of Physics Laboratory 2	4
GEOG 2650		3

Upper Division Elective		3
ENST 5810	Environmental Safety (Recommended Upper Division Elective)	3
Semester Hours		13

Year 4

Fall

GEOL 3750	Geoscience Seminar	1
GER Social Personal Awareness		3
Upper Division Elective		3
Upper Division Elective		3
Upper Division Elective		4
Semester Hours		14

Spring

GEOL 3750	Geoscience Seminar	1
GEOL 5802	Sedimentology and Stratigraphy	3
Upper Division Elective		3
Upper Division Elective		3
Spa Gen Ed Elective Course		3
Semester Hours		13

Total Semester Hours **120-122**

COURSE	TITLE	S.H.
Capstone Experience Options		
GEOL 48XX	Geology Field Camp: Preferred (Summer Junior or Senior Year)	4-6
STEM 4890	STEM Internship (Optional (Summer Junior or Senior Year))	4
GEOL 4830	Senior Thesis (Restricted)	4

Learning Outcomes

The learning outcomes for the Bachelor of Science in Applied 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.