

BACHELOR OF SCIENCE IN GEOLOGY

Admission to the Bachelor of Science and Bachelor of Arts in Geology has been suspended. Beginning Fall 2025 students can no longer declare this major. Please see an academic advisor or visit the STEM catalog page (<https://catalog.ysu.edu/undergraduate/colleges-programs/college-science-technology-engineering-mathematics/>) for other programs.

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/>)

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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 or SS 1500 or HONR 1500	Success Seminar Intro to Honors	1-2
General Education Requirements		
ENGL 1550 or ENGL 1549	Writing 1 Writing 1 with Support	3-4
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.) ^{Met with courses in the major}		
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		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 ^{must be taken twice in fall terms for a total of 2 hours}	2
GEOL 3755	Geological Research Methods and Data Analysis	3
GEOL 5802	Sedimentology and Stratigraphy	3
GEOG 3701		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		
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	PHYS 1501 & 1501L	Fundamentals of Physics 1 and Fundamentals of Physics Laboratory 1	5
CHEM 1516 & 1516L	General Chemistry 2 and General Chemistry 2 Laboratory	4	GEOL 3750	Geoscience Seminar	1
MATH 1570 or MATH 1571	Applied Calculus 1 Calculus 1	4	Upper Division Elective		3
STAT 3717 or MATH 1572	Statistical Methods Calculus 2	4	PHIL 2625	Introduction to Professional Ethics	3
PHYS 1501 & 1501L	Fundamentals of Physics 1 and Fundamentals of Physics Laboratory 1	5	Semester Hours		17
or PHYS 2610	General Physics 1		Spring		
PHYS 1502 & 1502L	Fundamentals of Physics 2 and Fundamentals of Physics Laboratory 2	4	PHYS 1502 & 1502L	Fundamentals of Physics 2 and Fundamentals of Physics Laboratory 2	4
or PHYS 2611	General Physics 2		GEOG 2650		3
Total Prescribed Semester Hours: 120-122 s.h.			Upper Division Elective		3
Total Semester Hours			ENST 5810	Environmental Safety (Recommended Upper Division Elective)	3
			Semester Hours		13
Year 1			Year 4		
Fall			Fall		
YSU 1500 or SS 1500	Success Seminar or	1-2	GEOL 3750	Geoscience Seminar	1
GEOL 1505 & 1505L	Physical Geology and Physical Geology Laboratory	4	GER Social Personal Awareness		3
ENGL 1550 or ENGL 1549	Writing 1 or Writing 1 with Support	3-4	Upper Division Elective		3
GEOL 2600	Geology in the Field	1	Upper Division Elective		3
CHEM 1515 & 1515L	General Chemistry 1 and General Chemistry 1 Laboratory	4	Upper Division Elective		4
Semester Hours			Semester Hours		14
13-15			Spring		
Spring			GEOL 3750	Geoscience Seminar	1
GEOL 2605	Historical Geology	4	GEOL 5802	Sedimentology and Stratigraphy	3
ENGL 1551	Writing 2	3	Upper Division Elective		3
GEOG 2626	World Geography	3	Upper Division Elective		3
GEOG 2611		3	Spa Gen Ed Elective Course		3
CHEM 1516 & 1516L	General Chemistry 2 and General Chemistry 2 Laboratory	4	Semester Hours		13
Semester Hours			Total Semester Hours		120-122
			COURSE TITLE S.H.		
Year 2			Capstone Experience Options		
Fall			GEOL 48XX	Geology Field Camp: Preferred (Summer Junior or Senior Year)	4-6
GEOL 3711	Mineralogy	3	STEM 4890	STEM Internship (Optional (Summer Junior or Senior Year))	4
GEOG 3701		3	GEOL 4830	Senior Thesis (Restricted)	4
MATH 1570	Applied Calculus 1	4	Learning Outcomes		
PHIL 1565	Critical Thinking	3	The learning outcomes for the Bachelor of Science in Applied Geology are as follows:		
Upper Division Elective		3	<ul style="list-style-type: none"> 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. 		
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			