

Geology, B.S.

Learn more about the Bachelor of Science in Geology.

The B.S. program prepares students for immediate entry into a career in geology or for graduate studies. Career opportunities for geologists in industry and government include environmental and geohazard assessment, evaluation of waste disposal sites, groundwater modeling, and exploration for natural resources. The B.S. program is excellent preparation for graduate study and ultimately for a career in research, teaching, industry, or government.

The B.S. program includes an intensive 4-6 week summer course in Field Geology, typically taken in the summer following the Junior or Senior year.

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Bachelor of Science

Summary of Requirements for the Degree

1. University Requirements (123 total s.h.)

- Students must complete all University requirements including those listed below.
- All Temple students must take a minimum of two writing-intensive courses at Temple as part of their major. The specific writing-intensive course options for this major are:

Code	Title	Credit Hours
EES 2096	Climate Change: Oceans To Atmosphere	4
EES 2097	Process Geomorphology	4
EES 4696	Vertebrate Paleontology and Taphonomy	3
EES 4796	Soils and Paleosols	4
EES 4896	Planetary Geology	4

- Students must complete the General Education (GenEd) requirements.
 - See the General Education section of the *Undergraduate Bulletin* for the GenEd curriculum.
 - Students who complete CST majors receive a waiver for 2 Science & Technology (GS) and 1 Quantitative Literacy (GQ) GenEd courses.
- Students must satisfy general Temple University residency requirements.

2. College Requirements

- 45 Upper Level (2000+) credits within the College of Science & Technology (CST), the College of Liberal Arts (CLA), or the College of Engineering (ENG).
- 90 credits within the College of Science & Technology (CST), the College of Liberal Arts (CLA), or the College of Engineering (ENG).
- All students in the College of Science and Technology are required to take a one credit first year seminar. SCTC 1001 CST First Year Seminar is the appropriate course option for every entering first year CST major. Transfer students should use SCTC 2001 CST Transfer Seminar to fulfill this requirement. Other courses that fulfill this requirement may be found on the CST College Requirements page.

3. Major Requirements for Bachelor of Science (70-74 s.h.)

At least 9 courses required for the major must be completed at Temple. At least 6 courses from EES 2002+, BIOL 2112/2912, CHEM 2201 & 2203 / CHEM 2211 & 2213 / CHEM 2921 & 2923, MATH 2043/2943 must be completed at Temple.

Code	Title	Credit Hours
Chemistry		
Select one of the following:		4
CHEM 1031 & CHEM 1033	General Chemistry I and General Chemistry Laboratory I	
CHEM 1951 & CHEM 1953	Honors General Chemical Science I and Honors Chemical Science Laboratory I (F)	
Mathematics		
MATH 1041 or MATH 1941	Calculus I Honors Calculus I	4
Select one of the following:		4
MATH 1044	Introduction to Probability and Statistics for the Life Sciences	
MATH 1042	Calculus II	
MATH 1942	Honors Calculus II	
Physics		
Select one of the following:		4
PHYS 1061	Elementary Classical Physics I	
PHYS 1961	Honors Elementary Classical Physics I (F)	
PHYS 2021	General Physics I	
PHYS 2921	Honors General Physics I (F)	
Science Foundation Electives (SFE) ¹		
Select two of the following:		8
BIOL 1111 or BIOL 1911	Introduction to Organismal Biology Honors Introduction to Organismal Biology	
BIOL 2112 or BIOL 2912	Introduction to Cellular and Molecular Biology Honors Introduction to Cellular and Molecular Biology	
CHEM 1032 & CHEM 1034 or CHEM 1952 & CHEM 1954	General Chemistry II and General Chemistry Laboratory II Honors General Chemical Science II and Honors Chemical Science Laboratory II	
CHEM 2201 & CHEM 2203 or CHEM 2921 & CHEM 2923	Organic Chemistry I and Organic Chemistry Laboratory I Organic Chemistry for Honors I and Organic Honors Laboratory I	
PHYS 1062 or PHYS 1962 or PHYS 2022 or PHYS 2922	Elementary Classical Physics II Honors Elementary Classical Physics II General Physics II Honors General Physics II	
Earth & Environmental Science		
EES 2001	Physical Geology	4
EES 2011	Mineralogy I (F)	4
Two EES courses between 2020-2029		8
EES 2021	Sedimentary Environments	
EES 2022	Paleontology and Stratigraphy (S)	
EES 3001	Igneous and Metamorphic Petrology (F)	4
One EES course between 3020-3025		4
EES 3021	Groundwater Hydrology (S)	
EES 3025	Physical Hydrology (F)	
One EES course between 4101-4109		4
EES 4101	Structural Geology (S)	
EES 4589	Field Geology ²	6

Two Upper-Level (2002+) Writing-Intensive EES electives ³ 6-8

Science Upper Level Electives (SUE) ^{1,3}

Select two of the following: 6-8

EES 2002 or higher (excluding required courses)	
EES 2002 or higher (excluding required courses)	
BIOL 2112 or BIOL 2912	Introduction to Cellular and Molecular Biology (or higher) Honors Introduction to Cellular and Molecular Biology
CHEM 2201 & CHEM 2203 or CHEM 2921 & CHEM 2923	Organic Chemistry I and Organic Chemistry Laboratory I (or higher) Organic Chemistry for Honors I and Organic Honors Laboratory I
MATH 2043 or MATH 2943	Calculus III (or higher) Honors Calculus III

Total Credit Hours **70-74**

Code	Title	Credit Hours
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(F) - Fall only course

(S) - Spring only course

- 1 Science Foundation Electives (SFE) and Science Upper-Level Electives (SUE) courses cannot be double-counted. Students may also select the honors versions of the courses listed.
- 2 Summer field camp is required of all B.S. geology majors and is usually taken in the summer following the junior or senior year. Students choose summer field camps at other institutions which are typically 4-6 weeks in length with tuition typically ranging from \$2,000 to \$4,000. The Earth & Environmental Science Department holds fundraisers throughout the year to help defray the costs. Students may also apply for research scholarships at CST and at the university. The Earth & Environmental Science undergraduate advisor must approve the choice of field camp.
- 3 Elective courses must be 3 or 4 credits. At most, one of the EES electives or SUEs may be a graduate-level course with permission of the faculty advisor.

Calculation of Major GPA

Courses listed under the major requirements for the degree will be included in the calculation of the major GPA. Courses that could not apply toward the major as an elective or required course would not be counted in the calculation of the major GPA. This would include CHEM 1027, for example.

Senior Research Project

Students whose cumulative GPA is at least 3.25 at the end of the first semester of their junior year are eligible to undertake a senior research project. In the second semester of their junior year, students must select a faculty research advisor and, with the advisor, prepare a written research proposal. After the research advisor and the undergraduate Earth & Environmental Science advisor approve the proposal, the student may register for up to four (4) hours of EES 4082 Individual Study Program for a grade. Additional credits may be offered in subsequent semesters, but only for Credit/No-Credit (CR/NC), to carry out the research project. Normally, the project will involve field or laboratory work in the summer between the junior and senior years and lead to presentation of the results at a departmental seminar.

Distinction in Major

To graduate with distinction in the major, students are required to achieve a 3.5 GPA in EES and Upper Level Science Electives for the major. In addition, a student graduating with distinction has no grade below C in the remaining courses required for the major.

Suggested Academic Plan

Bachelor of Science in Geology

Requirements for New Students starting in the 2021-2022 Academic Year

Year 1		Credit Hours
Fall		
EES 2001	Physical Geology	4
MATH 1041 or 1941	Calculus I	4
SCTC 1001	CST First Year Seminar	1

ENG 0802, 0812, or 0902	Analytical Reading and Writing [GW]	4
Elective		2
Term Credit Hours		15
Spring		
Select one of the following:		4
CHEM 1031 & CHEM 1033	General Chemistry I	
CHEM 1951 & CHEM 1953	Honors General Chemical Science I (F)	
EES 2020-2029	Facies Models (or Similar)	4
EES 2021	Sedimentary Environments	
IH 0851 or 0951	Intellectual Heritage I: The Good Life [GY]	3
Elective		4
Term Credit Hours		15
Year 2		
Fall		
EES 2011	Mineralogy I (F)	4
Select one of the following:		4
MATH 1042	Calculus II	
MATH 1942	Honors Calculus II	
MATH 1044	Introduction to Probability and Statistics for the Life Sciences	
IH 0852 or 0952	Intellectual Heritage II: The Common Good [GZ]	3
GenEd Breadth Course		3
Term Credit Hours		14
Spring		
EES 2020-2029 Paleontology & Stratigraphy (or Similar)		4
EES 2022	Paleontology and Stratigraphy (S)	
EES 3020-3025 Hydrology (or Similar)		4
EES 3021	Groundwater Hydrology (S)	
EES 3025	Physical Hydrology (F) ¹	
Science Foundation Elective ²		4
GenEd Breadth Course		3
Elective		1
Term Credit Hours		16
Year 3		
Fall		
EES 3001	Igneous and Metamorphic Petrology (F)	4
2002+ EES Elective [WI]		3-4
Select one of the following:		4
PHYS 1061	Elementary Classical Physics I	
PHYS 1961	Honors Elementary Classical Physics I (F)	
PHYS 2021	General Physics I	
PHYS 2921	Honors General Physics I (F)	
Elective		3-2
Term Credit Hours		14
Spring		
EES 4101-4109 Structural Geology (or Similar)		4
EES 4101	Structural Geology (S)	
Science Foundation Elective ²		4
GenEd Breadth Course		3-4
Elective		3-2
Term Credit Hours		14

Summer		
EES 4589	Field Geology (see Requirements page and Advisor) (SS)	6
Term Credit Hours		6
Year 4		
Fall		
2002+ EES Elective or Science Upper-Level Elective ³		3-4
GenEd Breadth Course		3
Elective		8-7
Term Credit Hours		14
Spring		
2002+ EES Elective [WI]		3-4
2002+ EES Elective or Science Upper-Level Elective ³		3-4
GenEd Breadth Course		3
Elective		6-4
Term Credit Hours		15
Total Credit Hours:		123

Code	Title	Credit Hours
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(F) - Fall only course

(S) - Spring only course

(SS) - Summer Session

¹ This is a Fall only course. If EES 3025 is taken instead of EES 3021, it is recommended in Year 3 Fall.

² Select from the Science Foundation Electives list under Requirements.

³ Select from the Earth & Environmental Science or Science Upper-Level Electives lists under Requirements.