

Geology BS

Overview

The Department of Earth and Environmental Science provides students the opportunity to study the Earth with a variety of traditional and environmental geology course work. The faculty work closely with students to give a combination of field-based experience and current laboratory and computational techniques.

Students in the **Bachelor of Science in Geology** acquire a solid foundation in the Earth and Environmental Sciences.

Delve into the physical, chemical and biological processes of Earth, from the remote past to the distant future. Learn how humans are impacted by and are impacting our planet. Explore climate change, energy resources and natural planetary forces.

Career opportunities for geologists span industry and government including environmental planning, mitigation of natural hazards, resource assessment, monitoring and management of water resources. The BS prepares students for graduate study and careers in research, teaching, industry or government and thoroughly prepares students for professional licensure examinations.

The BS program includes 5-6 credits of Field Geology coursework, which may be fulfilled through a combination of several specialized Temple courses, or through an external intensive 4–6 week field course taken in the summer following the junior or senior year.

Campus Location: Main

Program Code: ST-GEOL-BS

Distinction in Major

To graduate with distinction in this major, a student must satisfy the following criteria:

- achieve a 3.5 GPA in EES and Upper-Level Science Electives for the major, and
- no grade below C in the remaining courses required for the major.

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 and Environmental Science advisor approve the proposal, the student may register for up to four (4) hours of EES 4082 Individual Study Program II 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.

Accelerated Programs

Accelerated programs provide a pathway for students to pursue both an undergraduate degree and an advanced degree in a shorter amount of time. Below is a list of available accelerated programs for students in the BS in Geology.

- BS in Geology / MEd in Middle Grades Education with a Concentration in Science
- BS in Geology / MEd in Middle Grades Education with a Concentration in Mathematics and Science

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Learn more about the Bachelor of Science in Geology.

These requirements are for students who matriculated in academic year 2023-2024. Students who matriculated prior to fall 2023 should refer to the Archives to view the requirements for their Bulletin year.

Bachelor of Science Requirements

Summary of Requirements for the Degree

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

- Students must complete all University requirements including those listed below.
- All undergraduate students must complete at least two writing-intensive courses for a total of at least six credits 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

- A minimum of 90 total credits within the College of Science & Technology (CST), the College of Liberal Arts (CLA), and/or the College of Engineering (ENG).
 - A minimum of 45 of these credits must be upper-level (courses numbered 2000 and above).
- Complete a one-credit first-year or transfer seminar.
 - SCTC 1001 CST First Year Seminar for every entering first-year CST student.
 - SCTC 2001 CST Transfer Seminar for every entering transfer CST student.

3. Major Requirements for Bachelor of Science (69-74 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 1112 or BIOL 1912 or BIOL 2112 or BIOL 2912	Introduction to Biomolecules, Cells and Genomes Honors Introduction to Biomolecules, Cells and Genomes 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 and Environmental Science		
EES 2001	Physical Geology	4
EES 2011	Mineralogy I (F)	4
EES 2021	Sedimentary Environments	4
EES 2022	Paleontology and Stratigraphy (S)	4
EES 3001	Igneous and Metamorphic Petrology (F)	4
Select one of the following:		4
EES 3021	Groundwater Hydrology (S)	
EES 3025	Physical Hydrology (F)	
EES 4101	Structural Geology (S)	4
EES Field electives chosen from the following: ²		5-6
EES 2031	Introduction to Field Methods in the Earth and Environmental Sciences (F)	
EES 2032	Environmental Sensors (SS)	
EES 3015	Drone Shortcourse (S)	
EES 3031	Coastal Plain Sedimentology and Paleontology of the Cretaceous-Paleogene Transition (F)	
EES 3032	Field and Laboratory Methods in Environmental Geochemistry (S)	
EES 4031	Appalachian Tectonics (SS)	
EES 4589	Field Geology	
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	Calculus III (or higher)	

or MATH 2943

Honors Calculus III

Total Credit Hours	69-74
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Code	Title	Credit Hours
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(F) - Fall only course

(S) - Spring only course

(SS) - Summer Session

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

Students may elect to take some or all of their Field Elective credits through other institutions and transfer credits in as EES 4589. The Earth and Environmental Science faculty advisor must approve the choice(s) of external field course(s). Note that a typical 5-6 credit field course ranges from 4-6 weeks in length with tuition typically ranging from \$2,000 to \$4,000. The Department of Earth and Environmental Science holds fundraisers throughout the year to help defray the costs. Students may also apply for research scholarships at CST and at the university.

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.

Suggested Academic Plan

Bachelor of Science in Geology

Suggested Plan for New Students Starting in the 2023-2024 Academic Year

Year 1		
Fall		Credit Hours
SCTC 1001	CST First Year Seminar	1
EES 2001	Physical Geology	4
MATH 1041 or MATH 1941	Calculus I or Honors Calculus I	4
ENG 0802 or ENG 0812 or ENG 0902	Analytical Reading and Writing or Analytical Reading and Writing: ESL or Honors Writing About Literature	4
GenEd Breadth Course		3
Credit Hours		16
Spring		
EES 2021	Sedimentary Environments	4
Select one of the following:		4
MATH 1042 or MATH 1942	Calculus II or Honors Calculus II	
MATH 1044	Introduction to Probability and Statistics for the Life Sciences	
Select one of the following: ¹		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)	
GenEd Breadth Course		3
Credit Hours		15
Year 2		
Fall		
EES 2011	Mineralogy I (F)	4
Science Foundation Elective ²		4

IH 0851 or IH 0951	Intellectual Heritage I: The Good Life or Honors Intellectual Heritage I: The Good Life	3
GenEd Breadth Course		3
Credit Hours		14
Spring		
EES 2022	Paleontology and Stratigraphy (S)	4
2002+ EES Elective or Science Upper-Level Elective ³		3-4
Select one of the following: ¹		4
PHYS 1061 or PHYS 1961	Elementary Classical Physics I or Honors Elementary Classical Physics I	
PHYS 2021 or PHYS 2921	General Physics I or Honors General Physics I	
IH 0852 or IH 0952	Intellectual Heritage II: The Common Good or Honors Intellectual Heritage II: The Common Good	3
Credit Hours		14-15
Year 3		
Fall		
EES 3001	Igneous and Metamorphic Petrology (F)	4
EES Field Elective ⁴		0-1
Science Foundation Elective ²		4
GenEd Breadth Course		3-4
Elective		3-2
Credit Hours		14-15
Spring		
Select one of the following: ⁵		3-4
EES 3021	Groundwater Hydrology (S)	
2002+ EES Elective or Science Upper-Level Elective ³		
EES 4101	Structural Geology (S)	4
EES Field Elective ⁴		0-2
GenEd Breadth Course		3
Elective		3
Elective		2-0
Credit Hours		15-16
Summer		
EES Field Elective ⁴		6-0
Credit Hours		6-0
Year 4		
Fall		
Select one of the following: ⁵		3-4
EES 3025	Physical Hydrology (F)	
2002+ EES Elective or Science Upper-Level Elective ³		
2002+ Writing-Intensive EES Elective ^{WI 3}		3-4
EES Field Elective ⁴		0-1
Elective		3
Elective		3-2
Elective		3-2
Credit Hours		15-16
Spring		
2002+ Writing-Intensive EES Elective ^{WI 3}		3-4
EES Field Elective ⁴		0-2
Elective		3
Elective		3
Elective		3

Elective	2-1
Credit Hours	14-16
Total Credit Hours	123

Code	Title	Credit Hours
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- (F) - Fall only course
- (S) - Spring only course
- (SS) - Summer Session

1
The Honors versions of these courses are Fall-only courses. If the Honors versions are desired, it is recommended to switch positions with the Science Foundations Electives in the following Spring semesters.

2
Select from the Science Foundation Electives list under Requirements.

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

4
Select from the EES Field Electives list under Requirements.

5
Majors must take either EES 3025 or EES 3021. If both courses are taken, one may count as an elective.