

Geological Sciences, BS

Program Description

The Bachelor of Science in Geological Sciences is a technical program in Earth Science. This program provides knowledge and experience through lecture, laboratory, and field courses that will equip students to solve some of the most pressing problems of our region and society as a whole. Students will develop their understanding of physical and chemical Earth processes while gaining skills in spatial reasoning and analysis of complex systems. Within active, applied, and authentic learning opportunities, students will gain insight into geologic hazards, natural resources, and Earth's history. The region that surrounds Utah Tech University provides an ideal natural laboratory to apply the concepts of geological sciences to issues that impact the future of humanity.

Professional Licensure/Certification (PLC) Requirements

The curriculum for programs at Utah Tech University leading to professional licensure are designed to prepare students for Utah licensure and certification requirements. Admission into programs for professions requiring licensure and certification does not guarantee that students will obtain a license or certificate. Licensure and certification requirements are set by agencies that are not controlled by or affiliated with the University, and licensure and certification requirements can change at any time.

Licensure boards in each state establish requirements for licensure and certification for their respective state. States vary by which professions are required to be licensed and how licensure functions, and such requirements may change at any time. The terms related to licensure and certification, among others, also vary by state as well.

Students and prospective students are strongly encouraged to contact the state licensure entity in the state where they intend to work to review all licensure and certification requirements imposed by the student's state(s) of choice. The University cannot provide verification of a student's ability to meet licensure or certification requirements unrelated to its educational programming. Some states require individuals to complete additional requirements that are unrelated to educational prerequisites. For more information, visit the State Authorization and Professional Licensure (<https://academics.utahtech.edu/state-authorization/>) web page and select the program, or speak to the director of the program.

Utah Tech University shall not be held liable if a student is unable to qualify for licensure or certification in any jurisdiction.

This disclosure is made pursuant to 34 CFR §668.43(a)(5)(v)(C).

Program Curriculum

120 credits

Utah Tech General Education Requirements

All Utah Tech General Education requirements must be fulfilled. A previously earned degree may fulfill those requirements, but courses must be equivalent to Utah Tech's minimum General Education standards in American Institutions, English, and Mathematics.

General Education Core Requirements (<https://catalog.utahtech.edu/programs/generaleducation/#gerequirementstext>)

Code	Title	Hours
English		3-7
Mathematics		3-5
American Institutions		3-6
Life Sciences		3-10
Physical Sciences		3-5
Fine Arts		3
Literature/Humanities		3
Social & Behavioral Sciences		3

Geological Sciences Core Requirements

Code	Title	Hours
CHEM 1210 & CHEM 1215	Principles of Chemistry I (PS) and Principles of Chemistry I Lab (LAB)	5

CHEM 1220 & CHEM 1225	Principles of Chemistry II and Principles of Chemistry II Lab	5
GEO 1110 & GEO 1115	Physical Geology (PS) and Physical Geology Lab (LAB)	4
GEO 1220 & GEO 1225	Historical Geology and Historical Geology Lab	4
GEO 2700R	Field Methods in Geoscience Research	1
GEO 2990R	Career Seminar in Geology	1
GEO 3110	Scientific Writing	3
GEO 3200	Mineralogy	4
GEO 3500	Geomorphology	4
GEO 3550	Sedimentology & Stratigraphy	4
GEO 3600	Igneous and Metamorphic Petrology	4
GEO 3700	Structural Geology and Tectonics	4
GEO 4600	Field Geology	5
GEO 4800R	Independent Research	1
GEOG 3600 & GEOG 3605	Introduction to Geographic Information Systems and Introduction to Geographic Information Systems Laboratory	4
MATH 1210	Calculus I (MA)	4
PHYS 2010 or PHYS 2210	College Physics I (PS) Physics/Scientists Engineers I (PS)	4
PHYS 2015 or PHYS 2215	College Physics I Lab Physics/Scientists Engineers I Lab	1
PHYS 2020 or PHYS 2220	College Physics II Physics/Scientists EngineersII	4
PHYS 2025 or PHYS 2225	College Physics II Lab Physics/Scientists Engineers II Lab	1

Electives

Code	Title	Hours
Choose 10 credits from among the following:		
GEO 3000	Advanced Geologic Investigation of Colorado Plateau Basin and Range provinces through national parks	3
GEO 3060	Environmental Geology	3
GEO 3180	Paleontology	4
GEO 3710	Hydrology	3
GEO 4000R	Selected Geology Field Excursions	1
GEOG 4140	Advanced GIS Analysis	3
GEOG 4180	Geoprocessing with Python	3
ENVS 3210	Soil Science	3

Travel Course Required (a single course cannot count for both the Travel Course category and the electives category)

Code	Title	Hours
Choose one (1) of the following:		
GEO 3000	Advanced Geologic Investigation of Colorado Plateau Basin and Range provinces through national parks	3
GEO 3910	Applied Geologic Investigation of Iceland	3
GEO 3920	Applied Geological Investigation of the Andes	3
ENVS 3910	Biodiversity and Conservation in Costa Rica	3
ENVS 3920	Biodiversity and Conservation in the Peruvian Amazon	3
ENVS 3930	Biodiversity and Conservation in South Africa	3
GEOG 3930	Remote Sensing of Landscape: China	3

Graduation Requirements

1. Complete a minimum of 120 college-level credits (1000 and above).
2. Complete at least 40 upper-division credits (3000 and above).
3. Complete at least 30 upper-division credits at Utah Tech for institutional residency.
4. Cumulative GPA 2.0 or higher.
5. Grade C- or higher in all required courses.

Graduation Plan

1st Year

Fall Semester	Hours	Spring Semester	Hours
GEO 1110 & GEO 1115		4 GEO 1220 & GEO 1225	4
CHEM 1210 & CHEM 1215		5 CHEM 1220 & CHEM 1225	5
MATH 1210		4 ENGL 2010	3
ENGL 1010		3 General Education (Fine Arts) (https://catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)	3
		16	15

2nd Year

Fall Semester	Hours	Spring Semester	Hours
GEO 2990R		1 GEO 2700R	1
PHYS 2010 or 2210		4 Travel Course	3
PHYS 2015 or 2215		1 PHYS 2020 or 2220	4
General Education (Social & Behavioral Sciences) (https://catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)		3 PHYS 2025 or 2225	1
General Education (American Institutions) (https://catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)		3 General Education (Literature/ Humanities) (https://catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)	3
Electives		4 General Education (Life Sciences) (https://catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)	3
		16	15

3rd Year

Fall Semester	Hours	Spring Semester	Hours
GEO 3550		4 GEO 3110	3
GEOG 3600 & GEOG 3605		4 GEO 3700	4
Upper Division Program Elective		4 GEO 4600	5
Elective		3 Upper Division Program Elective	3
		15	15

4th Year

Fall Semester	Hours	Spring Semester	Hours
GEO 3200		4 GEO 3500	4
GEO 4800R		1 GEO 3600	4
Upper Division Program Elective		3 Electives	6

Electives	6	
	14	14

Total Hours 120

BS Geological Sciences Program Learning Outcomes

At the successful completion of this program, students will be able to:

1. Apply the scientific method to test hypotheses and interpretations.
2. Apply the concepts of both stratigraphic (relative) and radiometric geologic dating to interpret physical and biological events in Earth history vis-à-vis geologic processes, biological evolution, and/or natural and anthropogenic landscape and climate change.
3. Analyze the record of Earth surface processes from geologic and geographic landforms and assess geologic hazards.
4. Identify economically important Earth materials, predict their locations based on geologic data, and discuss their role in society and the global economy.
5. Analyze the important and diverse effects of plate tectonics and related physical and chemical processes in shaping Earth structure, history, resources, and hazards.