

Earth Science Education, B.S.

The Bachelor of Science in Earth Science Education (BS-ESED) is an interdisciplinary degree program that combines the geology core with the secondary education professional licensure program. This program prepares graduates to teach Earth science concepts in secondary education after gaining the foundational skills to observe, interpret, and describe the lithosphere, hydrosphere, atmosphere, and biosphere. It offers the essential hands-on experiences in a variety of topics including astronomy, plate tectonics, sedimentary processes, mineralogy, petrology, structures, (paleo)climatology, hydrology, and environmental science. The program integrates and applies concepts from physics, chemistry, statistics, and other quantitative subjects to questions about earth and planetary science and their interactions with humans, society, and the environment. It assists students in cultivating pedagogical skills and acquiring expertise in the field of Earth Science, equipping them with the necessary tools to excel in teaching at the secondary education level and pursue further studies in education at the graduate level. Other career options include environmental and geotechnical consulting, geologic engineering, resource management, education and outreach, state and federal government agencies, and energy and mineral resource exploration. Students successfully completing the requirements of their UVU professional teacher education program and all licensure requirements receive a baccalaureate degree from UVU and are recommended for a Utah Professional Educator License awarded by the Utah State Board of Education.

Matriculation Requirements

1. Complete the following courses: GEO 1010 Introduction to Geology PP, GEO 1015 Introduction to Geology Laboratory, MATH 1050 College Algebra QL (or MATH 1055 College Algebra with Preliminaries QL), MATH 1060 Trigonometry QL, BIOL 1010 General Biology BB with a grade of "C" or higher in each.
2. Complete a minimum of 30 semester hours of college credit.
3. Apply to the department of Earth Science for admission.
4. **Completion of an exit interview with the Earth Science Department chair and a Qualtrics Exit Survey prior to graduation.**

Secondary Education Requirements

1. ENGL and MATH QL courses must have a grade C or higher.
2. GPA of 3.0 or higher with no grade lower than a C in content area courses.
3. Completion of all General Education requirements and 70% of content area courses.
4. Pass LiveScan Criminal Background Check.

Program Requirements

Code	Title	Credit Hours
Total Credit Hours		121
General Education Requirements		30 Credits
ENGL 1010 or ENGH 1005	Introduction to Academic Writing CC Literacies and Composition Across Contexts CC	3
ENGL 2010	Intermediate Academic Writing CC	3
MATH 1050 or MATH 1055	College Algebra QL College Algebra with Preliminaries QL	4
Complete one of the following:		3
HIST 2700 & HIST 2710	US History to 1877 AS and US History since 1877 AS (6)	
HIST 1700	American Civilization AS (3)	
HIST 1740	US Economic History AS (3)	
POLS 1000	American Heritage AS (3)	
POLS 1100	American National Government AS (3)	
Complete the following:		
PHIL 2050	Ethics and Values IH	3
HLTH 1100 or EXSC 1097	Personal Health and Wellness TE Fitness for Life TE	2
Distribution Courses:		
BIOL 1010	General Biology BB	3
Physical Science ¹		
Additional Biology or Physical Science ¹		

Humanities Distribution		3
Fine Arts Distribution		3
Social/Behavioral Science		3
Discipline Core Requirements		91
		Credits
ASTR 1040	Elementary Astronomy PP	3
GEOG 3700	Wetland Studies	3
or BIOL 2500	Environmental Biology BB	
CHEM 1210	Principles of Chemistry I PP	4
CHEM 1215	Principles of Chemistry I Laboratory	1
CHEM 1220	Principles of Chemistry II PP	4
CHEM 1225	Principles of Chemistry II Laboratory	1
GEO 1010	Introduction to Geology PP	3
GEO 1015	Introduction to Geology Laboratory	1
GEO 1220	Historical Geology	3
GEO 1225	Historical Geology Laboratory	1
GEO 3700	Structure and Tectonics	4
GEO 3080	Earth Materials WE	4
& GEO 3085	and Earth Materials Laboratory	
GEO 4500	Sedimentary Geology WE	4
GEO 480R	Earth Science Seminar (must be taken twice)	1
METO 1010	Introduction to Meteorology PP	3
METO 3100	Climate and the Earth System	3
SCIE 4210	Science Teaching Methods I	3
SCIE 4220	Teaching Methods in Science II	3
PHYS 2010	College Physics I PP	4
PHYS 2015	College Physics I Lab	1
PHYS 2020	College Physics II PP	4
PHYS 2025	College Physics II Lab	1
Education Courses:		
EDSC 1010	Introduction to Education	2
EDSC 3000	Educational Psychology	3
EDSC 325G	Equitable Technology Integration GI	2
EDSC 4200	Classroom Management I	2
EDSC 4250	Classroom Management II	2
EDSC 4440	Content Area Literacies	3
EDSC 445G	Multicultural and Multilingual Education	3
EDSC 455G	Secondary Curriculum Instruction and Assessment GI	3
EDSC 4850	Student Teaching Secondary	8
EDSC 4990	Teacher Assessment Project	2
EDSP 340G	Exceptional Students GI	2

1

This requirement is fulfilled with the core requirements.

Graduation Requirements

1. Completion of a minimum of 121 semester credits.
2. Overall GPA of 3.0 (B) or above with no grade lower than a C in major required content courses and no grade lower than a B- in Licensure and Methods courses. (Departments may require a higher GPA.)
3. Residency hours -- minimum of 20 credit hours through course attendance at UVU.
4. Completion of GE and specified departmental requirements.
5. Grade of C or higher in all GEO, BIOL, and METO courses.

6. Successful completion of at least one Global/Intercultural course.
7. Successful completion of at least two writing enriched (WE) courses.

Graduation Plan

This graduation plan is a sample plan and is intended to be a guide. Your specific plan may differ based on your Math and English placement and/or transfer credits applied. You are encouraged to meet with an advisor and set up an individualized graduation plan in Wolverine Track (<http://www.uvu.edu/wolverinetrack/>).

First Year

Semester 1		Credit Hours
ENGL 1010 or ENGH 1005	Introduction to Academic Writing CC or Literacies and Composition Across Contexts CC	3
MATH 1050 or MATH 1055	College Algebra QL or College Algebra with Preliminaries QL	4
American Institutions		3
HLTH 1100 or EXSC 1097	Personal Health and Wellness TE or Fitness for Life TE	2
GEO 1010	Introduction to Geology PP	3
GEO 1015	Introduction to Geology Laboratory	1
Credit Hours		16

Semester 2		Credit Hours
CHEM 1210	Principles of Chemistry I PP	4
CHEM 1215	Principles of Chemistry I Laboratory	1
ENGL 2010	Intermediate Academic Writing CC	3
GEO 1220	Historical Geology	3
GEO 1225	Historical Geology Laboratory	1
EDSC 1010	Introduction to Education	2
Humanities Distribution		3
Credit Hours		17

Second Year

Semester 3		Credit Hours
BIOL 1010	General Biology BB	3
PHYS 2010	College Physics I PP	4
PHYS 2015	College Physics I Lab	1
METO 1010	Introduction to Meteorology PP	3
GEO 480R	Earth Science Seminar	0.5
Fine Arts Distribution		3
Credit Hours		14.5

Semester 4		Credit Hours
CHEM 1220	Principles of Chemistry II PP	4
CHEM 1225	Principles of Chemistry II Laboratory	1
PHYS 2020	College Physics II PP	4
PHYS 2025	College Physics II Lab	1
GEOG 3700 or BIOL 2500	Wetland Studies or Environmental Biology BB	3
GEO 480R	Earth Science Seminar	0.5
Credit Hours		13.5

Third Year

Semester 5		Credit Hours
GEO 3080	Earth Materials WE	3
GEO 3085	Earth Materials Laboratory	1
ASTR 1040	Elementary Astronomy PP	3
PHIL 2050 or PHIL 205G	Ethics and Values IH or Ethics and Values IH GI	3
SCIE 4210	Science Teaching Methods I	3
Social/Behav Science Distribution		3
Credit Hours		16

Semester 6		Credit Hours
GEO 3700	Structure and Tectonics	4
GEO 4500	Sedimentary Geology WE	4
METO 3100	Climate and the Earth System	3
EDSP 340G	Exceptional Students GI	2

SCIE 4220	Teaching Methods in Science II	3
Credit Hours		16
Fourth Year		
Semester 7		
EDSC 3000	Educational Psychology	3
EDSC 325G	Equitable Technology Integration GI	2
EDSC 4440	Content Area Literacies	3
EDSC 445G	Multicultural and Multilingual Education	3
EDSC 455G	Secondary Curriculum Instruction and Assessment GI	3
EDSC 4200	Classroom Management I	2
Credit Hours		16
Semester 8		
EDSC 4250	Classroom Management II	2
EDSC 4850	Student Teaching Secondary	8
EDSC 4990	Teacher Assessment Project	2
Credit Hours		12
Total Credit Hours		121

Program Learning Outcomes

1. Integrate the processes encompassed within the rock cycle, plate tectonics, and deep time into secondary education curriculum.
2. Communicate complex scientific concepts to secondary education students in a clear and engaging manner.
3. Demonstrate effective, engaging, and individualized teaching and assessment strategies specifically tailored to Earth science education.
4. Guide students in evaluating scientific information, making evidence-based conclusions, and developing a scientific mindset that values curiosity, skepticism, and evidence.
5. Cultivate a sense of wonder and appreciation for the natural world in students, while fostering a desire to explore and understand Earth science beyond the classroom to become future stewards of the Earth.