

# BS in Earth & Space Science Education (694020) MAP Sheet

Physical and Mathematical Sciences, Geological Sciences

For students entering the degree program during the 2024-2025 curricular year

This major is designed to prepare students to teach in public schools. In order to graduate with this major, students are required to complete Utah State Office of Education licensing requirements. To view these requirements go to <http://education.byu.edu/licensing.html> or contact the Education Advisement Center, 175 MCKB, (801) 422-3426

University Core and Graduation Requirements				Suggested Sequence of Courses			
<b>University Core Requirements:</b>				<b>FRESHMAN YEAR</b>		<b>JUNIOR YEAR</b>	
<b>Requirements</b>	<b># Classes</b>	<b>Hours</b>	<b>Classes</b>	<u>1st Semester</u>		<u>5th Semester</u>	
<b>Religion Cornerstones</b>				UNIV 101	2.00	GEOL 411	3.00
Teachings and Doctrines of the Book of Mormon	1	2.00	REL A 275	First Year Writing	3.00	GEOL 491R	0.50
Jesus Christ and the Everlasting Gospel	1	2.00	REL A 250	GEOL 111	4.00	WRTG 316	3.00
Foundations of the Restoration	1	2.00	REL C 225	PHSCS 105 & 107	4.00	PHY S 276R	4.00
The Eternal Family	1	2.00	REL C 200	Religion Cornerstone Class	2.00	IP&T 371	1.00
<b>BYU Foundations for Student Success</b>				<b>Total Hours:</b>	<b>15.00</b>	IP&T 372	1.00
Foundations for Student Success	1	2.00	UNIV 101	<u>2nd Semester</u>		GE Religion	2.00
<b>The Individual and Society</b>				American Heritage	3.00	<b>Total Hours:</b>	<b>14.50</b>
American Heritage	1 to 2	3.00-6.00	from approved list	CHEM 105 or CHEM 111	4.00	<u>6th Semester</u>	
Global and Cultural Awareness	1	3.00	SC ED 353*	GEOL 112	4.00	GE Arts, Letters, Sciences	3.00
<b>Skills</b>				PHSCS 106 & 108	4.00	GEOL 491R	0.50
First Year Writing	1	3.00	from approved list	Religion Cornerstone Class	2.00	Geology Elective 2	3.00
Advanced Written and Oral Communications	1	3.00	WRTG 316*	<b>Total Hours:</b>	<b>17.00</b>	CP SE 402	2.00
Quantitative Reasoning	1	4.00	MATH 112*	<b>SOPHMORE YEAR</b>		SC ED 353	2.00
Languages of Learning (Math of Language)	1	4.00	MATH 112*	<u>3rd Semester</u>		GE Arts, Letters, Sciences	3.00
<b>Arts, Letters and Sciences (Complete 6 of 7)</b>				CHEM 106 & 107 or CHEM 112	3.00-4.00	GE Religion	2.00
Civilization 1	1	3.00	from approved list	GEOL 210*	3.00	<b>Total Hours:</b>	<b>15.50</b>
Civilization 2	1	3.00	from approved list	PHSCS 137	3.00	<b>SENIOR YEAR</b>	
Arts	1	3.00	from approved list	GE Arts, Letters, Sciences	3.00	<u>7th Semester</u>	
Letters	1	3.00	from approved list	Religion Cornerstone Class	2.00	IP&T 373	1.00
Biological Science	1	3.00-4.00	from approved list	<b>Total Hours:</b>	<b>14.00-15.00</b>	GEOL 491R	0.50
Physical Science	2	3.00	GEOL 210*	* Geol 210 Begins meeting before start of Fall semester		Geology Elective 3	3.00
Social Science	1	3.00	from approved list	<u>4th Semester</u>		PHY S 377	3.00
<b>Core Enrichment: Electives</b>				Geology Elective 1	3.00	PHY S 378	1.00
Religion Electives	3 to 4	6.00	from approved list	GEOL 491R	0.50	SC ED 375	3.00
Open Electives	Variable	Variable	personal choice	PHSCS 127	3.00	GE Arts, Letters, Sciences	3.00
<b>Graduation Requirements:</b>				GE Arts, Letters, Sciences	3.00	GE Religion	2.00
Minimum residence hours required		30.00		MATH 112	4.00	<b>Total Hours:</b>	<b>16.50</b>
Minimum hours needed to graduate		120.00		Religion Cornerstone Class	2.00	<u>8th Semester</u>	
				<b>Total Hours:</b>	<b>15.50</b>	SC ED 476R or 496R	12.00
						<b>Total Hours:</b>	<b>12.00</b>
*These classes fill both university core and program requirements							

## Program Requirements

*This major is designed to prepare students to teach in public schools. In order to graduate with this major, students are required to complete Utah State Office of Education licensing requirements. To view these requirements go to <https://www.schools.utah.gov/curr/licensing> or contact the Education Advisement Center, 350 MCKB, 801-422-3426.*

*For students accepted into the major after December 16, 2019, grades below C in any required coursework in a teaching major or teaching minor will not be accepted. Teacher candidates must maintain a cumulative GPA of 2.7 or higher once admitted into the program and to qualify for student teaching. For additional details on admission and retention requirements for teaching majors and teaching minors, see Educator Preparation Program Requirements in the Undergraduate Catalog.*

### Requirement 1 —Complete 4 Courses

GEOL 111 - Physical Geology 4.0  
GEOL 112 - Historical Geology 4.0  
GEOL 210 - Field Studies 3.0  
GEOL 411 - Geomorphology 3.0

### Requirement 2 —Complete 2 hours

*Take 4 times.*

GEOL 491R - Geology Seminar - *You may take up to 2.0 credit hours* 0.5

### Requirement 3 —Complete 3 of 15 Courses

GEOL 100 - Dinosaurs 3.0  
GEOL 109 - Geology of Planets 3.0  
GEOL 230 - Geological Communications 3.0  
GEOL 351 - Mineralogy 4.0  
GEOL 352 - Petrology 3.0  
GEOL 370 - Sedimentology & Stratigraphy 3.0  
GEOL 375 - Structural Geology 3.0  
GEOL 405 - GeoMathematics 3.0  
GEOL 435 - Groundwater 3.0  
GEOL 440 - Solid Earth Geophysics 3.0  
GEOL 445 - Geochemistry 3.0  
GEOL 452 - Petrography to Petrogenesis 3.0  
GEOL 460 - Economic & Resource Geology 3.0  
GEOL 476 - Intro Seismic Interpretation 3.0  
GEOL 480 - Paleontology 3.0

### Requirement 4 —Complete 1 of 2 Options

#### Option 4.1 —Complete 3 Courses

CHEM 105 - Gen College Chem 1+Lab Integr 4.0  
CHEM 106 - General College Chemistry 2 3.0  
CHEM 107 - Gen Coll Chem Lab 1.0

#### Option 4.2 —Complete 2 Courses

CHEM 111 - Principles of Chemistry 1 4.0  
CHEM 112 - Principles of Chemistry 2 3.0

### Requirement 5 —Complete 8 Courses

MATH 112 - Calculus 1 4.0  
PHSCS 105 - General Physics 1 3.0  
PHSCS 106 - General Physics 2 3.0  
PHSCS 107 - General Physics Lab 1 1.0  
PHSCS 108 - General Physics Lab 2 1.0  
PHSCS 127 - Descriptive Astronomy 3.0  
PHSCS 137 - Energy, Climate, Environment 3.0  
WRTG 316 - Technical Communication 3.0

### Requirement 6 —Complete 2 Requirements

*Professional Education Component:*

Licensure requirements: Contact the Education Advisement Center, 350 MCKB, 801-422-3426, to schedule the final interview to clear your application for the secondary teaching license. You should be registered for your last semester at BYU prior to the scheduled appointment.

### Requirement 6.1 —Complete 9 Courses

CPSE 402 - Educ Stdnts w/Disabls in ScEd 2.0  
IP&T 371 - Integrating K-12 Ed Tec 1 1.0

IP&T 372 - Integrating K-12 in El. Ed. 1.0  
IP&T 373 - Tchng K-12 Online/Blended Lrn 1.0  
PHY S 276 - Exploration of Teaching 4.0  
PHY S 377 - Teaching Methods & Instruction 3.0  
PHY S 378 - Practicum in Secondary Educ 1.0  
SC ED 353 - Multicultural Educ 2.0  
SC ED 375 - Multicultural Educ 2.0

Note: Fingerprinting and FBI clearance must be completed before enrollment in Phy S 276.

### Requirement 6.2 —Complete 12 hours

PHY S 476 - Secondary Student Teaching 0.0v  
PHY S 496 - Acad Intern: Secondary Ed 0.0v  
Student teachers/interns must complete three forms in their Educator accounts (PIBS, CDS, FED) and attach their TWS to the Educator account for their program. All four must be completed to be cleared for graduation.

## THE DISCIPLINE

Geological sciences consist of a number of disciplines aimed at understanding the Earth's origin and development and the natural processes that have operated upon it and within it from the time of formation of the solar system. With the development of remote sensing technology and the exploration of the solar system by spacecraft, geological sciences have become increasingly important for understanding not only the Earth but the Moon, other planets and their moons, and small bodies that orbit the sun. Understanding the dynamic processes of Earth and other planets is relevant to many societal needs, such as assessment and forecasting of natural hazards, environmental change, and discovery of energy and mineral resources. Some of the diverse disciplines that can be studied in this department include general geology, plate tectonics, volcanology, geochemistry, geophysics, paleontology, environmental geology, petroleum geology, hydrogeology, paleoclimatology, and planetary geology.

## CAREER OPPORTUNITIES

Graduates have the opportunity to work both outdoors and in the laboratory, pursuing careers in energy, mineral, and water resources or in environmental evaluation with industry, government, or consulting firms. The substantial preparation in basic sciences and mathematics also leads to a broad spectrum of teaching opportunities. Some scholarship money is available for those who pursue a geological sciences degree as a pre-law track.

The most marketable terminal degree in geological sciences is the MS. Starting salaries for this degree are often very competitive with any other discipline.

## MAP DISCLAIMER

While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

## DEPARTMENT INFORMATION

Department of Geological Sciences  
Brigham Young University S-389 ESC  
Provo, UT 84602

Telephone: (801) 422-3918

## ADVISEMENT CENTER INFORMATION

Computational, Mathematical, & Physical Sciences College Advisement  
Center Brigham Young University N-181 ESC  
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Telephone: (801) 422-2674

## FACULTY ADVISOR:

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## LICENSURE ADVISOR

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