

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

## Physical and Mathematical Sciences, Geological Sciences

For students entering the degree program during the 2022-2023 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/ess/licensing.html> or contact Education Advisement Center, 350 MCKB, (801) 422-3426.



University Core and Graduation Requirements	Suggested Sequence of Courses	
<b>University Core Requirements:</b>		
<b>Requirements</b>	<b>#Classes</b>	<b>Hours</b>
<b>Religion Cornerstones</b>		
Teachings and Doctrine of The Book of Mormon	1	2.0
Jesus Christ and the Everlasting Gospel	1	2.0
Foundations of the Restoration	1	2.0
The Eternal Family	1	2.0
<b>The Individual and Society</b>		
American Heritage	1-2	3-6.0
Global and Cultural Awareness	1	3.0
<b>Skills</b>		
First Year Writing	1	3.0
Advanced Written and Oral Communications	1	3.0
Quantitative Reasoning	1	4.0
Languages of Learning (Math or Language)	1	4.0
<b>Arts, Letters, and Sciences</b>		
Civilization 1	1	3.0
Civilization 2	1	3.0
Arts	1	3.0
Letters	1	3.0
Biological Science	1	3-4.0
Physical Science	1	3.0
Social Science	1	3.0
<b>Core Enrichment: Electives</b>		
Religion Electives	3-4	6.0
Open Electives	Variable	Variable
<b>*THESE CLASSES CAN FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (16-20 hours overlap)</b>		
<b>Graduation Requirements:</b>		
Minimum residence hours required		30.0
Minimum hours needed to graduate		120.0
<p><b>FRESHMAN YEAR</b></p> <p><b>1st Semester</b></p> <p>First-year Writing 3.0</p> <p>GEOL 111 4.0</p> <p>MATH 112 4.0</p> <p>PHSCS 105, 107 4.0</p> <p>Religion Cornerstone course 2.0</p> <p><b>Total Hours 17.0</b></p> <p><b>2nd Semester</b></p> <p>American Heritage 3.0</p> <p>CHEM 105 or CHEM 111 4.0</p> <p>GEOL 112 4.0</p> <p>PHSCS 106, 108 4.0</p> <p>Religion Cornerstone course 2.0</p> <p><b>Total Hours 17.0</b></p> <p><b>SOPHOMORE YEAR</b></p> <p><b>3rd Semester</b></p> <p>CHEM 106, 107 or CHEM 112 3-4.0</p> <p>GEOL 210 3.0</p> <p>PHSCS 137 3.0</p> <p>Civilization 1 3.0</p> <p>Religion Cornerstone course 2.0</p> <p><b>Total Hours 14-15.0</b></p> <p><b>4th Semester</b></p> <p>Geology elective 1 3.0</p> <p>GEOL 491R 0.5</p> <p>PHSCS 127 3.0</p> <p>Civilization 2/Arts 3.0</p> <p>Social Science 3.0</p> <p>Religion cornerstone course 2.0</p> <p><b>Total Hours 14.5</b></p> <p><b>JUNIOR YEAR</b></p> <p><b>5th Semester</b></p> <p>GEOL 411 3.0</p> <p>GEOL 491R 0.5</p> <p>WRTG 316 3.0</p> <p>PHY S 276R 4.0</p> <p>IP&amp;T 371 1.0</p> <p>IP&amp;T 372 1.0</p> <p>Religion elective 2.0</p> <p><b>Total Hours 14.5</b></p> <p><b>6th Semester</b></p> <p>PHIL 423 or Letters 3.0</p> <p>GEOL 491R 0.5</p> <p>Geology elective 2 3.0</p> <p>CPSE 402 2.0</p> <p>SC ED 353 3.0</p> <p>Biological Science 3.0</p> <p>Religion elective 2.0</p> <p><b>Total Hours 16.5</b></p> <p><b>SENIOR YEAR</b></p> <p><b>7th Semester</b></p> <p>IP&amp;T 373 1.0</p> <p>GEOL 491R 0.5</p> <p>Geology elective 3 3.0</p> <p>PHY S 377 3.0</p> <p>PHY S 378 1.0</p> <p>SC ED 375 3.0</p> <p>General Elective 2.0</p> <p>Religion elective 2.0</p> <p><b>Total Hours 15.5</b></p> <p><b>8th Semester</b></p> <p>SC ED 476R or 496R 12.0</p> <p><b>Total Hours 12.0</b></p>		
<p>**Note: The sequence of courses suggested may not fit the circumstances of every student. Students should contact their college advisement center for help in outlining an efficient schedule.</p> <p>Note: Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.</p> <p><b>FOR UNIVERSITY CORE OR PROGRAM QUESTIONS, CONTACT THE ADVISEMENT CENTER.</b></p>		

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

### 2022-2023 Program Requirements (84 - 86 Credit Hours)

*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 and Remote Sensing	3.0

**REQUIREMENT 2** Complete 2.0 hours from the following course(s)

<b>TAKE 4 TIMES.</b>	
GEOL 491R - Geology Seminar	0.5
<i>You may take up to 2 credit hours.</i>	

**REQUIREMENT 3** Complete 3 courses

GEOL 100 - Dinosaurs	3.0
GEOL 109 - Geology of the Planets	3.0
GEOL 230 - Earth Data Visualization	3.0
GEOL 351 - Mineralogy	4.0
GEOL 352 - Petrology	3.0
GEOL 370 - Sedimentology and Stratigraphy	3.0
GEOL 375 - Structural Geology	3.0
GEOL 405 - Applied Mathematics in the Geological Sciences	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 and Resource Geology	3.0
GEOL 476 - Introduction to Seismic Interpretation	3.0
GEOL 480 - Paleontology	3.0

**REQUIREMENT 4** Complete 1 option

**OPTION 4.1** Complete 3 courses

CHEM 105 - General College Chemistry 1 with Lab (Integrated)	4.0
CHEM 106 - General College Chemistry 2	3.0
CHEM 107 - General College Chemistry Laboratory	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, and the Environment	3.0
*WRTG 316 - Technical Communication	3.0

**REQUIREMENT 6** Complete 2 options

**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.**

**OPTION 6.1** Complete 9 courses

CPSE 402 - Educating Students with Disabilities in Secondary Classroom	2.0
IP&T 371 - Integrating K-12 Educational Technology 1	1.0
IP&T 372 - Integrating K-12 Educational Technology 2	1.0
IP&T 373 - Teaching in K-12 Online and Blended Learning Contexts	1.0
PHY S 276 - Exploration of Teaching	4.0
PHY S 377 - Teaching Methods and Instruction	3.0
PHY S 378 - Practicum in Secondary Education	1.0
*SC ED 353 - Multicultural Education for Secondary Education	3.0
SC ED 375 - Adolescent Development and Classroom Management	3.0

**Note: Fingerprinting and FBI clearance must be completed before enrollment in Phy S 377.**

**OPTION 6.2** Complete 12.0 hours from the following course(s)

PHY S 476 - Secondary Student Teaching	12.0v
PHY S 496 - Academic Internship: Secondary Education	12.0v

**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.

## **BS in Earth & Space Science Education (694020)**

**2022-2023**

### **DEPARTMENT INFORMATION**

#### **Department of Geological Sciences**

Brigham Young University

S-389 ESC

Provo, UT 84602

Telephone: (801) 422-3918

### **ADVISEMENT CENTER INFORMATION**

#### **Physical and Mathematical Sciences College Advisement Center**

Brigham Young University

N-181 ESC

Provo, UT 84602

Telephone: (801) 422-2674

### **FACULTY ADVISOR:**

Duane Merrell

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### **LICENSURE ADVISOR**

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