## University Core and Graduation Requirements

### University Core Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Religion Cornerstones</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
<td>2.0</td>
<td>REL A 275</td>
</tr>
<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
<td>2.0</td>
<td>REL A 250</td>
</tr>
<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
<td>2.0</td>
<td>REL C 225</td>
</tr>
<tr>
<td>The Eternal Family</td>
<td>1</td>
<td>2.0</td>
<td>REL C 200</td>
</tr>
<tr>
<td><strong>The Individual and Society</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Heritage</td>
<td>1-2</td>
<td>3-6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td><strong>Global and Cultural Awareness</strong></td>
<td>1</td>
<td>3.0</td>
<td>SC ED 353*</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Writing</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
<td>3.0</td>
<td>WRTG 316*</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
<td>4.0</td>
<td>MATH 112*</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
<td>4.0</td>
<td>MATH 112*</td>
</tr>
<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilization 1</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Civilization 2</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Arts</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Biological Science</td>
<td>1</td>
<td>3-4.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Physical Science</td>
<td>1</td>
<td>3.0</td>
<td>GEOL 210*</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td><strong>Core Enrichment: Electives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religion Electives</td>
<td>3-4</td>
<td>6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
</tr>
</tbody>
</table>

*THESE CLASSES CAN FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (16-20 hours overlap)*

### Graduation Requirements:

- Minimum residence hours required: 30.0
- Minimum hours needed to graduate: 120.0

## Suggested Sequence of Courses

### FRESHMAN YEAR

**1st Semester**
- First-year Writing: 3.0
- GEOL 111: 4.0
- MATH 112: 4.0
- PHSCS 105, 107: 4.0
- Religion Cornerstone course: 2.0
- Total Hours: 17.0

**2nd Semester**
- American Heritage: 3.0
- CHEM 105 or CHEM 111: 4.0
- GEOL 112: 4.0
- PHSCS 106, 108: 4.0
- Religion Cornerstone course: 2.0
- Total Hours: 17.0

### SOPHOMORE YEAR

**3rd Semester**
- CHEM 106, 107 or CHEM 112: 3-4.0
- GEOL 210: 3.0
- PHSCS 137: 3.0
- Civilization 2: 3.0
- Religion Cornerstone course: 2.0
- Total Hours: 14-15.0

**4th Semester**
- Geology elective 1: 3.0
- GEOL 491R: 0.5
- PHSCS 127: 3.0
- Civilization 2/Arts: 3.0
- Religion elective: 2.0
- Religious elective: 3.0
- Total Hours: 16.5

### JUNIOR YEAR

**5th Semester**
- GEOL 411: 3.0
- GEOL 491R: 0.5
- PHY S 276R: 4.0
- IP&T 371: 1.0
- Religion elective: 2.0
- Total Hours: 14.5

**6th Semester**
- GEOL 411: 3.0
- GEOL 491R: 0.5
- PHY S 276R: 4.0
- IP&T 371: 1.0
- Religion elective: 2.0
- Total Hours: 15.5

### SENIOR YEAR

**7th Semester**
- IP&T 373: 1.0
- GEOL 491R: 0.5
- GEology elective 3: 3.0
- PHY S 377: 3.0
- PHY S 378: 1.0
- SC ED 375: 3.0
- General Elective: 2.0
- Religion elective: 2.0
- Total Hours: 15.5

**8th Semester**
- SC ED 476R or 496R: 12.0
- Total Hours: 12.0

**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.

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.

FOR UNIVERSITY CORE OR PROGRAM QUESTIONS, CONTACT THE ADVISEMENT CENTER.
- For additional details on admission and retention requirements for teaching majors and teaching minors, see Educator Preparation Program Requirements in the Undergraduate Catalog.
- 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.

### Requirement 1
Complete 4 courses
- GEOL 111 - Physical Geology
- GEOL 112 - Historical Geology
- *GEOL 210 - Field Studies
- GEOL 411 - Geomorphology and Remote Sensing

### Requirement 2
Complete 2.0 hours from the following course(s)
- GEOL 491R - Geology Seminar

### Requirement 3
Complete 3 courses
- GEOL 109 - Geology of the Planets
- GEOL 230 - Geological Communications
- GEOL 351 - Mineralogy
- GEOL 352 - Petrology
- GEOL 370 - Sedimentology and Stratigraphy
- GEOL 375 - Structural Geology
- GEOL 405 - Applied Mathematics in the Geological Sciences
- GEOL 435 - Introduction to Groundwater
- GEOL 440 - Solid Earth Geophysics
- GEOL 445 - Geochemistry
- GEOL 452 - Petrography to Petrogenesis
- GEOL 460 - Economic and Resource Geology
- GEOL 476 - Introduction to Seismic Interpretation
- GEOL 480 - Paleontology

### Requirement 4
Complete 1 option

#### Option 4.1
Complete 3 courses
- CHEM 105 - General College Chemistry 1 with Lab (Integrated)
- CHEM 106 - General College Chemistry 2
- CHEM 107 - General College Chemistry Laboratory
- CHEM 111 - Principles of Chemistry 1
- CHEM 112 - Principles of Chemistry 2

### Option 4.2
Complete 2 courses

#### Requirement 5
Complete 8 courses
- MATH 112 - Calculus 1
- PHYS 105 - General Physics 1
- PHYS 106 - General Physics 2
- PHYS 107 - General Physics Lab 1
- PHYS 108 - General Physics Lab 2
- PHYS 127 - Descriptive Astronomy
- PHYS 137 - Energy, Climate, and the Environment
- WRIT 316 - Technical Communication

### 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
- IP&T 371 - Integrating K-12 Educational Technology 1
- IP&T 372 - Integrating K-12 Educational Technology 2
- IP&T 373 - Teaching in K-12 Online and Blended Learning Contexts
- PHYS 276 - Exploration of Teaching
- PHYS 377 - Teaching Methods and Instruction
- PHYS 378 - Practicum in Secondary Education
- *SC ED 353 - Multicultural Education for Secondary Education
- SC ED 375 - Adolescent Development and Classroom Management

#### Option 6.2
Complete 12.0 hours from the following course(s)
- Academic Internship: Secondary Education
- Secondary Student Teaching
- Practicum in Secondary Education
- Teaching Methods and Instruction
- Exploration of Teaching
- Adolescent Development and Classroom Management
- Integrating K-12 Educational Technology 1
- Integrating K-12 Educational Technology 2
- Teaching in K-12 Online and Blended Learning Contexts
- Exploring the Solar System by Spacecraft
- Development of Remote Sensing Technology
- Understanding the Dynamic Processes of Earth and Other Planets
- Understanding the Earth's Origin and Development and the Natural Processes that Have Operated Upon It and Within It
- Principles of Chemistry 1
- Principles of Chemistry 2
- Calculus 1
- General Physics 1
- General Physics 2
- General Physics Lab 1
- General Physics Lab 2
- Descriptive Astronomy
- Energy, Climate, and the Environment
- Technical Communication

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

#### Graduation Requirements (2021-2022)
- 84 - 86 Credit Hours

### 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.

### 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.
Department of Geological Sciences
Brigham Young University
S-389 ESC
Provo, UT 84602
Telephone: (801) 422-3918

Advancement Center Information
Physical and Mathematical Sciences College Advancement Center
Brigham Young University
N-181 ESC
Provo, UT 84602
Telephone: (801) 422-2674

Faculty Advisor:
Duane Merrell
N-143 ESC
Brigham Young University, Provo, UT 84602
Telephone: (801) 422-2255

Licensure Advisor
Tara Goulding
120 MCKB
Brigham Young University, Provo, UT 84602
Telephone: (801) 422-7327