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

**Physical and Mathematical Sciences, Geological Sciences**

For students entering the degree program during the 2017-2018 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 Student Services, 350 MCKB, (801) 422-3426.

<table>
<thead>
<tr>
<th>University Core Requirements:</th>
<th>Suggested Sequence of Courses</th>
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<td><strong>University Core Requirements:</strong></td>
<td><strong>JUNIOR YEAR</strong></td>
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<tr>
<td>Requirements</td>
<td><strong>1st Semester</strong></td>
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<td><strong>Religion Cornerstones</strong></td>
<td><strong>First-year Writing</strong></td>
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<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td><strong>GEOL 111</strong></td>
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<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td><strong>MATH 112</strong></td>
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<tr>
<td>Foundations of the Restoration</td>
<td><strong>PHSCS 105, 107</strong></td>
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<tr>
<td>The Eternal Family</td>
<td><strong>Religion Cornerstone course</strong></td>
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<tr>
<td>The Individual and Society</td>
<td><strong>Total Hours</strong> 17.0</td>
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<tr>
<td>American Heritage</td>
<td><strong>American Heritage</strong></td>
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<tr>
<td>Global and Cultural Awareness</td>
<td><strong>GEOL 112</strong></td>
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<tr>
<td>Skills</td>
<td><strong>PHSCS 106, 108</strong></td>
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<td>First Year Writing</td>
<td><strong>Religion Cornerstone course</strong></td>
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<tr>
<td>Advanced Written and Oral Communications</td>
<td><strong>Total Hours</strong> 17.0</td>
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<tr>
<td>Quantitative Reasoning</td>
<td><strong>American Heritage</strong></td>
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<tr>
<td>Languages of Learning (Math or Language)</td>
<td><strong>CHEM 105 or CHEM 111</strong></td>
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<tr>
<td>Arts, Letters, and Sciences</td>
<td><strong>GEOL 112</strong></td>
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<tr>
<td>Civilization 1</td>
<td><strong>PHSCS 106, 108</strong></td>
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<tr>
<td>Civilization 2</td>
<td><strong>Religion Cornerstone course</strong></td>
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<tr>
<td>Arts</td>
<td><strong>Total Hours</strong> 14-15.0</td>
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<tr>
<td>Letters</td>
<td><strong>Total Hours</strong> 14-15.0</td>
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<tr>
<td>Biological Science</td>
<td><strong>Geology elective 3</strong></td>
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<tr>
<td>Physical Science</td>
<td><strong>Geology elective 3</strong></td>
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<td>Social Science</td>
<td><strong>PHYS 377</strong></td>
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<td>Core Enrichment: Electives</td>
<td><strong>PHYS 378</strong></td>
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<td>Religion Electives</td>
<td><strong>SC ED 375</strong></td>
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<td>Open Electives</td>
<td><strong>General Elective</strong></td>
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<tr>
<td><em>These classes can fill both university core and program requirements (16-20 hours overlap)</em></td>
<td><strong>Religion elective</strong></td>
</tr>
</tbody>
</table>

**Graduation Requirements:**

| Minimum residence hours required | 30.0 |
| Minimum hours needed to graduate | 120.0 |

**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.
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.

For students accepted into the major after August 1, 2014, grades below C in any required coursework in a teaching major or teaching minor will not be accepted. Teacher candidates must maintain a total GPA of 3.0 or higher throughout the program and to qualify for student teaching. For 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
- GEOG 110: Physical Geography 4.0
- GEOG 111: Historical Geography 4.0
- GEOG 210: Field Studies 3.0
- GEOG 411: Geomorphology and Remote Sensing 3.0

**REQUIREMENT 2** Complete 2.0 hours from the following course(s)
- GEOG 491R: Geology Seminar 0.5

You may take up to 2 credit hours.

**REQUIREMENT 3** Complete 3 courses
- GEOG 100: Dinosaurs 3.0
- GEOG 109: Geology of the Planets 3.0
- GEOG 230: Geologic Communications 3.0
- GEOG 351: Mineralogy 4.0
- GEOG 352: Petrology 3.0
- GEOG 370: Sedimentology and Stratigraphy 3.0
- GEOG 375: Structural Geology 3.0
- GEOG 405: Applied Mathematics in the Geological Sciences 3.0
- GEOG 435: Introduction to Groundwater 3.0
- GEOG 440: Solid Earth Geophysics 3.0
- GEOG 445: Geochimistry 3.0
- GEOG 452: Petrography to Petrogenesis 3.0
- GEOG 460: Economic and Resource Geology 3.0
- GEOG 476: Introduction to Seismic Interpretation 3.0
- GEOG 480: Paleontology 3.0

**REQUIREMENT 4** Complete 1 option
- OPTION 4.1 Complete 3 courses
- OPTION 4.2 Complete 2 courses

**REQUIREMENT 5** Complete 8 courses
- ENGL 316: Technical Communication 3.0
- MATH 112: Calculus 1 4.0
- PHYS 105: General Physics 1 3.0
- PHYS 106: General Physics 2 3.0
- PHYS 107: General Physics Lab 1 1.0
- PHYS 108: General Physics Lab 2 1.0
- PHYS 127: Descriptive Astronomy 3.0

**REQUIREMENT 6** Complete 2 options

**PROFESSIONAL EDUCATION COMPONENT:**

Licensure requirements: Contact Education Student Services, 120 MCKB, 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
- IAP 371: Integrating K-12 Educational Technology 1.0
- IAP 372: Integrating K-12 Educational Technology 2 1.0
- IAP 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 2.0
- 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 LiveText accounts (PIBS, CDS, FED) and attach their TWS to the LiveText 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
BS in Earth & Space Science Education (694020)
2017-2018

Brigham Young University
S-389 ESC
Provo, UT 84602
Telephone: (801) 422-3918

ADVISEMENT CENTER INFORMATION
FOR UNIVERSITY CORE OR PROGRAM QUESTIONS CONTACT
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