**BS in Geology (694022) MAP Sheet**

**Physical and Mathematical Sciences, Geological Sciences**

For students entering the degree program during the 2022-2023 curricular year.

The basic degree in geology prepares graduates for professional employment in industry or government or for advanced studies in geology, business, or law.

### 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>Religion Cornerstones</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>
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<td>2.0</td>
<td>REL C 225</td>
</tr>
<tr>
<td>The Eternal Family</td>
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<td>2.0</td>
<td>REL C 200</td>
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<tr>
<td>The Individual and Society</td>
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</tr>
<tr>
<td>American Heritage</td>
<td>1-2</td>
<td>3-6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Skills</td>
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<td></td>
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</tr>
<tr>
<td>First Year Writing</td>
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<td>from approved list</td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
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<td>3.0</td>
<td>WRTG 316*</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
<td>3.0</td>
<td>MATH 112* or 113*, or STAT 121*</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
<td>3.40</td>
<td>MATH 112* or 113*, or STAT 121*</td>
</tr>
<tr>
<td>Arts, Letters, and Sciences</td>
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</tr>
<tr>
<td>Civilization 1</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Civilization 2</td>
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<td>from approved list</td>
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<tr>
<td>Arts</td>
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<td>3.0</td>
<td>from approved list</td>
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<tr>
<td>Letters</td>
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<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Biological Science</td>
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<tr>
<td>Physical Science</td>
<td>1</td>
<td>3.0</td>
<td>GEOL 210*</td>
</tr>
<tr>
<td>Social Science</td>
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<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Core Enrichment: Electives</td>
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<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></td>
<td>Variable</td>
<td>personal choice</td>
</tr>
</tbody>
</table>

*NOTE: THESE CLASSES CAN FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (9-14 hours overlap)*

#### Graduation Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum residence hours required</td>
<td>30.0</td>
<td></td>
</tr>
<tr>
<td>Minimum hours needed to graduate</td>
<td>120.0</td>
<td></td>
</tr>
</tbody>
</table>

### Suggested Sequence of Courses

#### FRESHMAN YEAR

**1st Semester**

- First-year Writing: 3.0
- GEOL 111 (FW): 4.0
- CHEM 105 or CHEM 111: 4.0
- Religion Cornerstone course: 2.0
- Total Hours: 13.0

**2nd Semester**

- American Heritage (FW): 3.0
- CHEM 106, 107 (FWSpSu) or CHEM 112: 3.40
- GEOL 112: 4.0
- MATH 113: 4.0
- Religion Cornerstone course: 2.0
- Total Hours: 14-15.0

#### SOPHOMORE YEAR

**3rd Semester**

- GEOL 210 (F) (Begins meeting before start of Fall semester): 3.0
- GEOL 230 (F): 3.0
- GEOL 351 (F): 4.0
- MATH 113: 4.0
- Religion Cornerstone course: 2.0
- Total Hours: 16.0

**4th Semester**

- General Elective: 3.0
- GEOL 352 (W): 3.0
- GEOL 100-level elective: 3.0
- PHSCS 105: 3.0
- Religion Cornerstone course: 2.0
- Total Hours: 14.0

**Spring/Summer**

- GEOL 420: 2.0
- GEOL 421: 2.0
- GEOL 422: 2.0
- Total Hours: 6.0

#### JUNIOR YEAR

**5th Semester**

- WRTG 316 (FWSpSu): 3.0
- GEOL 491R (FW): 0.5
- PHSCS 106: 3.0
- Religion Cornerstone course: 2.0
- Total Hours: 14.5

**6th Semester**

- GEOL 400-level elective: 3.0
- GEOL 491R (FW): 0.5
- GEOL 375: 3.0
- Civilization 2: 3.0
- Religion elective: 2.0
- General electives: 2.5
- Total Hours: 14.0

#### SENIOR YEAR

**7th Semester**

- GEOL 400-level elective: 3.0
- GEOL 400-level elective: 3.0
- GEOL 491R (FW): 0.5
- Global & Cultural Awareness: 3.0
- Letters: 3.0
- Religion Elective: 2.0
- Total Hours: 14.5

**8th Semester**

- GEOL 400-level elective: 3.0
- GEOL 491R (FW): 0.5
- Social Science: 3.0
- Arts: 3.0
- Religion Elective: 2.0
- Biological Science: 3.0
- Total Hours: 14.5

*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.
<table>
<thead>
<tr>
<th>BS in Geology (694022)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022-2023 Program Requirements (74 - 75 Credit Hours)</td>
</tr>
</tbody>
</table>

**Licensure:** This program meets the educational requirements designed to lead to an occupationally required professional license or certificate in the state of Utah. Students pursuing occupations requiring a license or certificate in a state other than Utah should contact the appropriate BYU academic advisement center as well as the licensing agency in the state where they intend to work to seek information and guidance regarding licensure and certification requirements. No D credit is allowed in major courses.

**REQUIREMENT 1** Complete 12 courses
- GEOL 111 - Physical Geology 4.0
- GEOL 112 - Historical Geology 4.0
- *GEOL 210 - Field Studies 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 420 - Geological Field Methods 2.0
- GEOL 421 - Geological Mapping 2.0
- GEOL 422 - Geologic Writing 2.0

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

**TAKE 4 TIMES.**
- GEOL 491R - Geology Seminar 0.5

**REQUIREMENT 3** Complete 3 courses
- GEOL 411 - Geomorphology and Remote Sensing 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 1 course
- STAT 121 - Principles of Statistics 3.0
- STAT 201 - Statistics for Engineers and Scientists 3.0

**REQUIREMENT 6** Complete 5 courses
- MATH 112 - Calculus 1 4.0
- MATH 113 - Calculus 2 4.0
- PHSCS 105 - General Physics 1 3.0
- PHSCS 106 - General Physics 2 3.0
- WRTG 316 - Technical Communication 3.0

**REQUIREMENT 7** All students are required to construct a portfolio of their work that includes samples of their writing, scientific data analysis, and presentations - both oral and written. The portfolio will be evaluated during the semester before 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 recovery 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**
- Physical and Mathematical Sciences College Advisement Center
  - Brigham Young University
  - N-181 ESC
  - Provo, UT 84602
  - Telephone: (801) 422-2674