# BS in EARTH AND SPACE SCIENCE EDUCATION (694020) MAP Sheet

## Department of Geological Sciences

For students entering the degree program during the 2012–2013 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, 120 MCKB, (801) 422-3426.

## UNIVERSITY CORE AND GRADUATION REQUIREMENTS

UNIVERSITY CORE REQUIREMENTS

| Requirements | #Classes | Hours | Classes |
|---|---|---|---|
| **Doctrinal Foundation** | | | |
| Book of Mormon | 2 | 4.0 | Rel A 121/H *and* 122/H |
| New Testament | 1 | 2.0 | Rel A 211/H *or* 212/H |
| Doctrine and Covenants | 1 | 2.0 | Rel C 324/H *or* 325/H |
| **The Individual and Society** | | | |
| Citizenship | | | |
| American Heritage | 1–2 | 3–6.0 | from approved list |
| Global & Cultural Awareness | 1 | 3.0 | Sc Ed 353* |
| **Skills** | | | |
| Effective Communication | | | |
| First-Year Writing | 1 | 3.0 | from approved list |
| Adv Written & Oral Communication | 1 | 3.0 | Engl 316* |
| Quantitative Reasoning | 0–1 | 0–4.0 | Math 119* |
| Languages of Learning (Math or Language) | 1 | 4.0 | Math 119* |
| **Arts, Letters, and Sciences** | | | |
| Civilization 1 and 2 | 2 | 6.0 | from approved list |
| Arts | 1 | 3.0 | from approved list |
| Letters | 1 | 3.0 | Phil 423* |
| Scientific Principles & Reasoning | | | |
| Biological Science | 1–2 | 3–5.0 | from approved list |
| Physical Science | 1 | 3.0 | Geol 210* |
| Social Science | 1 | 3.0 | from approved list |
| **Core Enrichment: Electives** | | | |
| Religion Electives | 3–4 | 6.0 | from approved list |
| Open Electives | Variable | Variable | personal choice |

GRADUATION REQUIREMENTS:

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

## PROGRAM REQUIREMENTS (83–86.0 total hours)

Grades below C- in professional education courses or content courses will not be accepted in the teaching major or teaching minor. Teacher candidates must have a cumulative 2.85 GPA in teaching major and teaching minor courses to qualify for student teaching.

| | | | |
|---|---|---|---|
| **Complete the following:** | | | 4.0 |
| Geol | 111 | Physical Geology | 4.0 |
| Geol | 112 | Historical Geology | 3.0 |
| Geol | 210* | Field Studies | 3.0 |
| Geol | 411 | Geomorphology and Remote Sensing | |
| **Complete 2 hours of the following** | | | 0.5 |
| Geol | 491R | Geology Seminar (take 4 times) | |
| **Select three courses from the following:** | | | 3.0 |
| Geol | 100 | Dinosaurs | 3.0 |
| Geol | 109 | Geology of the Planets | 3.0 |
| Geol | 230 | Geological Communications | 4.0 |
| Geol | 351 | Mineralogy | 3.0 |
| Geol | 352 | Petrology | 3.0 |
| Geol | 370 | Sedimentology and Stratigraphy | 3.0 |
| Geol | 375 | Structural Geology | 3.0 |
| Geol | 435 | Introduction to Groundwater | 3.0 |
| Geol | 440 | Solid Earth Geophysics | 3.0 |
| Geol | 445 | Geochemistry | 3.0 |
| Geol | 460 | Economic and Resource Geology | 3.0 |
| Geol | 476 | Introduction to Seismic Interpretation | 3.0 |
| Geol | 480 | Paleontology | |
| **Complete one of the following options:** | | | |
| **Either** | | | 4.0 |
| Chem | 105 | General College Chemistry | 3.0 |
| Chem | 106 | General College Chemistry | 1.0 |
| Chem | 107 | General College Chemistry Laboratory | |
| **Or** | | | 3.0 |
| Chem | 111 | Principles of Chemistry | 3.0 |
| Chem | 112 | Principles of Chemistry | |

**Complete the following:**

| | | | |
|---|---|---|---|
| Engl | 316* | Technical Communication | 3.0 |
| Math | 119* | Introduction to Calculus | 4.0 |
| Phil | 423* | History and Philosophy of Science | 3.0 |
| Phscs | 105 | Introductory Applied Physics | 3.0 |
| Phscs | 106 | Introductory Applied Physics | 3.0 |
| Phscs | 107 | Introductory Applied Physics Lab | 1.0 |
| Phscs | 108 | Introductory Applied Physics Lab | 1.0 |
| Phscs | 127 | Descriptive Astronomy | 3.0 |
| Phscs | 137 | Intro to the Atmosphere & Weather | 3.0 |

**Complete the Professional Education Component:**

**Complete the teacher 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.

**A. Complete the following:**

| | | | |
|---|---|---|---|
| CPSE | 402 | Educating Students with Disabilities | 2.0 |
| IP&T | 286 | Instructional Technology in Teaching | 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 | 350 | Adolescent Development | 2.0 |
| Sc Ed | 353* | Multicultural Education | 2.0 |
| Sc Ed | 379 | Classroom Management | 1.0 |

**Note:** FBI fingerprint and background clearance must be completed before enrollment in Phy S 276.

**B. Complete 12 hours from one of the following:**

| | | | |
|---|---|---|---|
| Sc Ed | 476R | Student-Teaching Internship | 12.0 |
| Sc Ed | 496R | Academic Internship | 12.0 |

***THESE CLASSES CAN FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (16–20.0 hours overlap)**


FOR UNIVERSITY CORE OR PROGRAM QUESTIONS CONTACT
THE ADVISEMENT CENTER
Physical and Mathematical Sciences College Advisement Center
N-181 ESC
Brigham Young University, Provo, UT 84602
Telephone: (801) 422-2674

FACULTY ADVISOR:
Brooks Britt
S-387 ESC
Brigham Young University, Provo, UT 84602
Telephone: (801) 422-7316

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

# BS IN EARTH AND SPACE SCIENCE EDUCATION (694020)
## 2012–2013

***Suggested Sequence of Courses:***

**FRESHMAN YEAR****

1st Semester

| | |
|---|---|
| 1st Year Writing | 3.0 |
| or A Htg 100 | (3.0) |
| Geol 111 (FW) | 4.0 |
| Math 119 (FWSpSu) | 4.0 |
| Phscs 105, 107 (FWSp) | 4.0 |
| Rel A 121 (FWSpSu) | 2.0 |
| **Total Hours** | **17.0** |

2nd Semester

| | |
|---|---|
| A Htg 100 | 3.0 |
| or 1st Year Writing | (3.0) |
| Chem 105 (FWSpSu) | 4.0 |
| or Chem 111 | (3.0) |
| Geol 112 (W) | 4.0 |
| Phscs 106, 108 (FWSu) | 4.0 |
| Rel A 122 (FWSpSu) | 2.0 |
| **Total Hours** | **16–17.0** |

**SOPHOMORE YEAR****

3rd Semester

| | |
|---|---|
| Chem 106, 107 (FWSpSu) | 4.0 |
| or Chem 112 | (3.0) |
| Geol 210 (F) | 3.0 |
| (Begins meeting before start of Fall semester) | |
| Phscs 127 (FWSpSu) | 3.0 |
| Civilization 1 | 3.0 |
| Rel A 211/212 | 2.0 |
| **Total Hours** | **14-15.0** |

4th Semester

| | |
|---|---|
| Geology elective | 3.0 |
| Geol 491R (FW) | 0.5 |
| Phscs 137 (FW) | 3.0 |
| Civilization 2 | 3.0 |
| Social Science | 3.0 |
| Rel C 324/325 | 2.0 |
| **Total Hours** | **14.5** |

**JUNIOR YEAR****

5th Semester

| | |
|---|---|
| Geology elective | 3.0 |
| Geol 491R (FW) | 0.5 |
| Engl 316 (FWSpSu) | 3.0 |
| Phy S 276R (FWSp) | 4.0 |
| Arts | 3.0 |
| Religion Elective | 2.0 |
| **Total Hours** | **15.5** |

6th Semester

| | |
|---|---|
| Phil 423 (FW) | 3.0 |
| Geol 491R (FW) | 0.5 |
| Geology 411 (W) | 3.0 |
| CPSE 402 | 2.0 |
| Sc Ed 350 | 2.0 |
| Sc Ed 353 | 2.0 |
| Biological Science | 3.0 |
| Religion Elective | 2.0 |
| **Total Hours** | **17.5** |

**SENIOR YEAR****

7th Semester

| | |
|---|---|
| IP&T 286 (FWSpSu) | 1.0 |
| Geol 491R (FW) | 0.5 |
| Geology elective | 3.0 |
| Phy S 377 | 3.0 |
| Phy S 378 | 1.0 |
| Sc Ed 379 | 1.0 |
| Global & Cultural Awareness | 3.0 |
| Religion Elective | 2.0 |
| **Total Hours** | **14.5** |

8th Semester

| | |
|---|---|
| Sc Ed 476R or 496R (FW) | 12.0 |
| **Total Hours** | **12.0** |

**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.

For more information on careers in your major, please refer to *From Major to Career*, a publication which is located in all college advisement centers.

****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.

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