EARTH SCIENCE EDUCATION

Individuals interested in teaching in K-12 schools must complete a degree in the content area they want to teach plus the teacher preparation program through the Department of Teaching and Learning. Individuals must complete the teaching major/teaching track within that degree program, which may contain different course requirements than the academic major since the sequence of courses is designed to meet state standards. Upon completion of the degree program with the teaching track and the secondary licensure program, one will be eligible for a standard Montana teaching license in this content area.

- Secondary Education Licensure Program (http://www.coehs.umt.edu/departments/currint/undergradprograms/seced/default.php)
- Licensure Degree Requirements (http://catalog.umt.edu/colleges-schools-programs/education-human-sciences/teaching-learning/lic-secondary-licensure)

Bachelor of Science - Geosciences; Earth Science Education Option

College Humanities & Sciences

Degree Specific Credits: 70

Required Cumulative GPA: 2.0

Catalog Year: 2017-2018

Note: Students must be formally admitted to the Teacher Education Program and complete all of the professional education licensure requirements. See the Department of Teaching and Learning (http://catalog.umt.edu/colleges-schools-programs/education-human-sciences/teaching-learning) in the College of Education and Human Sciences for more information. A major GPA of 2.75 is required to be eligible for student teaching. This major does not qualify as a single field endorsement. Individuals must complete a second teaching major or minor in another content area.

General Education Requirements

Information regarding these requirements can be found in the General Education Section (http://catalog.umt.edu/academics/general-education-requirements) of the catalog.

Summary

<table>
<thead>
<tr>
<th>Lower Division Core</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geosciences Core</td>
<td></td>
</tr>
<tr>
<td>Environmental Geoscience Course</td>
<td></td>
</tr>
<tr>
<td>Upper Division Geosciences</td>
<td>17</td>
</tr>
<tr>
<td>Physics</td>
<td>10</td>
</tr>
<tr>
<td>Chemistry</td>
<td>7</td>
</tr>
<tr>
<td>Math</td>
<td>8</td>
</tr>
<tr>
<td>Astronomy</td>
<td>3</td>
</tr>
<tr>
<td>Teaching Methods Course</td>
<td>4</td>
</tr>
<tr>
<td>Languages</td>
<td>4</td>
</tr>
<tr>
<td>Total Hours</td>
<td>70</td>
</tr>
</tbody>
</table>

Lower Division Core

Rule: Must complete all of the following courses

Minimum Required Grade: C-

17 Total Credits Required

Geosciences Core

Rule: Must complete all of the following courses.

- GEO 101N Introduction to Physical Geology 3
- GEO 102N Introduction to Physical Geology Lab 1
- GEO 211 Earth’s History and Evolution 4
- GEO 225 Earth Materials 4

Total Hours 12

Minimum Required Grade: C-

Environmental Geoscience Course

Rule: Must complete one of the following.

- GEO 105N Oceanography 3

Total Hours 3

Minimum Required Grade: C-

Upper Division Geosciences

Minimum Required Grade: C-

17 Total Credits Required

Required Upper Division Geoscience

Rule: Complete all of the following.

- GEO 304E Science and Society 3
- GEO 311 Paleobiology 3
- GEO 315 Structural Geology 4
- GEO 318 Climate System Dynamics 4

Total Hours 14

Minimum Required Grade: C-

Elective Upper Division Geoscience

Rule: Complete one additional GEO course at the 300- or 400-level

Note: GEO 320 is recommended to complete the upper division writing requirement in Geosciences but students may also select from the university-approved list of upper division writing courses to fulfill this requirement.

Physics

Rule: Must complete 1 of the following sequences

10 Total Credits Required

Physics

Rule: May complete the following sequence

- PHSX 205N College Physics I 4
- PHSX 206N College Physics I Laboratory 1
- PHSX 207N College Physics II 4
### Earth Science Education

**PHSX 208N**  
College Physics II Laboratory  
1

**Total Hours**  
10

Minimum Required Grade: C-

**Physics with Calculus**

**Rule:** May complete the following sequence

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHSX 215N</td>
<td>Fund of Physics w/Calc I</td>
<td>4</td>
</tr>
<tr>
<td>PHSX 216N</td>
<td>Physics Laboratory I w/Calc</td>
<td>1</td>
</tr>
<tr>
<td>PHSX 217N</td>
<td>Fund of Physics w/Calc II</td>
<td>4</td>
</tr>
<tr>
<td>PHSX 218N</td>
<td>Physics Laboratory II w/Calc</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Hours**  
10

Minimum Required Grade: C-

### Chemistry

**Rule:** Must complete the following courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHMY 121N</td>
<td>Introduction to General Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHMY 123</td>
<td>Introduction to Organic and Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHMY 485</td>
<td>Laboratory Safety</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Hours**  
7

Minimum Required Grade: C-

### Math

**Rule:** Must complete one math and one statistics course

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 162</td>
<td>Applied Calculus</td>
<td>4</td>
</tr>
<tr>
<td>or M 171</td>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td>STAT 216</td>
<td>Introduction to Statistics</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total Hours**  
8

Minimum Required Grade: C-

### Astronomy

**Rule:** Must complete the following course

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR 131N</td>
<td>Planetary Astronomy</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Hours**  
3

Minimum Required Grade: C-

### Teaching Methods Course

**Rule:** Must complete the following course.

**Note:** The EDU 497 course number is used for multiple courses. Students should register for EDU 497 Methods: 5-12 Science.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDU 497</td>
<td>Teaching and Assessing</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total Hours**  
4

Minimum Required Grade: C-

### Languages

**Rule:** Must complete 1 of the following courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 162</td>
<td>Applied Calculus</td>
<td>4</td>
</tr>
<tr>
<td>or M 171</td>
<td>Calculus I</td>
<td></td>
</tr>
</tbody>
</table>

**Total Hours**  
4

Minimum Required Grade: C-

Note: Students graduating in Geosciences may substitute one of these courses in place of the Modern and Classical Language requirement.