# Bachelor of Arts in Earth Sciences - Quantitative Reasoning Category I/II and ENG 114

120 Total Units Required  
Minimum Number of Units in the Major: 49

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 115</td>
<td>General Chemistry I: Essential Concepts of Chemistry (Major Science and Math Foundation)</td>
<td>5</td>
</tr>
<tr>
<td>ENG 114</td>
<td>Writing the First Year: Finding Your Voice (A2) ^1</td>
<td>3</td>
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<tr>
<td>MATH 226</td>
<td>Calculus I (Major Science and Math Foundation, B4) ^2,^3</td>
<td>4</td>
</tr>
<tr>
<td>GE Area A ^4</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Units</strong></td>
<td></td>
<td>15</td>
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<tr>
<td><strong>Second Semester</strong></td>
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<tr>
<td>MATH 227</td>
<td>Calculus II (if selecting PHYS 220/PHYS 222)</td>
<td>4</td>
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<tr>
<td>or SF State Studies or University Elective ^5</td>
<td></td>
<td></td>
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<tr>
<td>Select One Set of Courses (Major Science and Math Foundation):</td>
<td></td>
<td>3-4</td>
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<tr>
<td>PHYS 111 &amp; PHYS 112</td>
<td>General Physics I and General Physics I Laboratory (B1, B3)</td>
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<tr>
<td>PHYS 220 &amp; PHYS 222</td>
<td>General Physics with Calculus I and General Physics with Calculus I Laboratory (B1, B3)</td>
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<tr>
<td>GE Area A</td>
<td></td>
<td>3</td>
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<tr>
<td>GE Area B: Life Science (B2)</td>
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<td>3</td>
</tr>
<tr>
<td>GE Area E</td>
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<td>3</td>
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<tr>
<td><strong>Units</strong></td>
<td></td>
<td>16-17</td>
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<tr>
<td><strong>Third Semester</strong></td>
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<td></td>
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<tr>
<td>ERTH 400</td>
<td>Earth Systems I (Major Earth Sciences Foundation)</td>
<td>3</td>
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<tr>
<td>Science and Math Foundation Elective ^6</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>GE Area C - Take Two</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>GE Area D</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Units</strong></td>
<td></td>
<td>15</td>
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| Fourth Semester                 |                                                                      |       |
| ERTH 205                        | Techniques in Earth Sciences (Major Earth Sciences Foundation)       | 2     |
| GE Area C                       |                                                                      | 3     |
| GE Area D - Take Two            |                                                                      | 6     |
| SF State Studies or University Elective ^5 |                                      | 3     |
| **Units**                       |                                                                      | 14    |

| Fifth Semester                  |                                                                      |       |
| Earth Sciences Elective (19 units) - Take Two ^7 |                                      | 6     |
| GE Area UD-B: Upper-Division Physical and/or Life Sciences (Consider SF State Studies Course) |                        | 3     |
| SF State Studies or University Elective - Take Two ^5 |                                      | 6     |
| **Units**                       |                                                                      | 15    |

| Sixth Semester                  |                                                                      |       |
| ERTH 500                        | Earth Systems II (Major Earth Sciences Foundation)                   | 3     |
| Earth Sciences Elective (19 units) - Take One ^7 |                                      | 3     |
| GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course) |                        | 3     |
| SF State Studies or University Elective ^5 |                                      | 4     |
| **Units**                       |                                                                      | 13    |

| Seventh Semester                |                                                                      |       |
| ERTH 600GW                      | Earth's Climate History - GWAR                                       | 3     |
| Earth Sciences Elective (19 units) - Take Two ^7 |                                      | 6     |
| GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course) |                        | 3     |
| SF State Studies or University Elective ^5 |                                      | 3     |
| **Units**                       |                                                                      | 15    |

| Eighth Semester                 |                                                                      |       |
| Select One (Major Culminating Experience): |                        | 4     |
| ERTH 652                        | Geoscience Partners in K-12 Education                                |       |
| ERTH 690 & ERTH 695             | Earth Sciences Capstone Presentation and Senior Project              |       |
| Earth Sciences Elective (19 units) - Take One ^7 |                                      | 4     |
| SF State Studies or University Elective - Take Three ^5 |                                      | 9     |
| **Units**                       |                                                                      | 17    |
| **Total Units**                 |                                                                      | 120-121 |

^1 ENG 114 can only be taken if you complete Directed Self-Placement (DSP) and select ENG 114; if you choose ENG 104/ENG 105 through DSP you will satisfy A2 upon successful completion of ENG 105 in the second semester; multilingual students may be advised into alternative English courses.
Depending on courses completed through Early Start, students in Pathway/Category III or IV may be required to enroll in a support course to complement their Quantitative Reasoning/B4 requirement. There are multiple course options for this pathway. Before enrolling in a B4 course, students should verify their MATH Pathway/Category in their Student Center. Information regarding the courses that correspond with your MATH Pathway/Category can be found on the Developmental Studies Office Website.

To avoid taking additional units, it is recommended that you meet SF State Studies requirements (AERM, GP, ES, SJ) within your GE or major.

Complementary Studies
Students in all Bachelor of Arts programs at SF State must complete at least 12 units of Complementary Studies, comprising coursework with a prefix outside of the primary prefix for the major. For the B.A. program in Earth Sciences, that prefix is ERTH. Students who complete the Earth Sciences BA program will have met the Complementary Studies requirement automatically by completing the mathematics, physics, and chemistry coursework required for the degree.

Transfer students who have earned AA-T or AS-T degrees and are pursuing a similar B.A. degree at SF State are required to fulfill Complementary Studies requirements for their major only if these courses are included in the minimum units required for the major.

Chemistry, physics, or mathematics elective (may not be a course designed primarily to satisfy a General Education requirement.)

Earth Sciences Electives (19 Units)
- Select at least 19 units of Earth & Climate Sciences (ERTH) or closely related coursework, with a coherent theme approved by a Department of Earth & Climate Sciences advisor.
- At least 15 elective units must come from upper-division coursework. At least 11 elective units must come from ERTH courses.
- No more than four of the 19 elective units can come from courses designed primarily to satisfy General Education requirements (such as 100 and 300 level ERTH courses).