# BACHELOR OF SCIENCE IN EARTH SCIENCES: GEOLOGY EMPHASIS – GEOL ASSOCIATE DEGREE FOR TRANSFER ROADMAP

This is a sample pathway for students who transfer to San Francisco State University in the current Bulletin year with an AS-T in Geology. Twenty-six units in the major (CHEM 115/CHEM 215/CHEM 216, ERTH 210, ERTH 500, ERTH 505, MATH 226, 2 elective units) and all lower-division GE requirements have been satisfied. Additional units in the major may have been satisfied. Check with a major advisor about the most appropriate course sequence. Degree completion guaranteed in 60 units; see the Associate Degree for Transfer (ADT) section for more information.

### Course Title Units

#### First Semester
- **ERTH 400** Earth Systems I (Major Core) 3
- **ERTH 420** Mineralogy and Petrology I (Major Emphasis) 4
- **Select One Set of Courses (Science and Math Foundation):** 1
  - **PHYS 111 & PHYS 112** General Physics I and General Physics I Laboratory (B1, B3) 2
  - **PHYS 220 & PHYS 222** General Physics with Calculus I and General Physics with Calculus I Laboratory (B1, B3) 2
- **MATH 227** Calculus II (if selecting PHYS 220/PHYS 222) 2
- or University Elective if selecting PHYS 111/PHYS 112 15

### Second Semester
- **ERTH 205** Techniques in Earth Sciences (Major Core) 2
- **ERTH 600GW** Earth’s Climate History - GWAR (Major Core) 3
- **Select One Set of Courses (Science and Math Foundation):** 1
  - **PHYS 121 & PHYS 122** General Physics II and General Physics II Laboratory 4
  - **PHYS 240 & PHYS 242** General Physics with Calculus III and General Physics with Calculus III Laboratory 4
- **Geology Emphasis Elective (9-10 units) - Take One** 3
- **GE Area UD-C: Upper-Division Arts and/or Humanities** 3

### Third Semester
- **ERTH 510** Structural Geology (Major Emphasis) 4
- **ERTH 515** Sedimentology and Stratigraphy (Major Emphasis) 4
- **ERTH 697** Undergraduate Research 4
- or University Elective
- **Geology Emphasis Elective (9-10 units) - Take One** 3
- **GE Area UD-D: Upper-Division Social Sciences** 3

### Fourth Semester
- **ERTH 620** Field Methods in Geology (Major Emphasis) 2
<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Units</th>
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<tbody>
<tr>
<td>ERTH 690</td>
<td>Earth Sciences Capstone Presentation (Major Culminating Experience)</td>
<td>1</td>
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<tr>
<td>Major Culminating Experience - Select One:</td>
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<td>2-4</td>
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<tr>
<td>ERTH 695</td>
<td>Senior Project</td>
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<tr>
<td>ERTH 698</td>
<td>Senior Thesis</td>
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<tr>
<td>Field Geology</td>
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<tr>
<td>Geology Emphasis Elective (9-10 units) - Take One</td>
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<td>3</td>
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<tr>
<td>GE Area UD-B: Upper Division Physical and/or Life Sciences</td>
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<td>3</td>
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<tr>
<td>U.S. and California Government</td>
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<td>3</td>
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<tr>
<td>or University Elective if US/CA Government met before transfer</td>
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<tr>
<td><strong>Units</strong></td>
<td><strong>14-16</strong></td>
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<tr>
<td><strong>Total Units</strong></td>
<td><strong>60-62</strong></td>
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1. PHYS 111/PHYS 112 are prerequisites for PHYS 121/PHYS 122. PHYS 220/PHYS 222 are prerequisites for PHYS 240/PHYS 242.
2. MATH 227 is a hidden corequisite for PHYS 220/PHYS 222.
3. **Geology Emphasis Electives (9-10 units)**
   - Select additional Geology emphasis elective courses upon advisement, subject to the constraints listed below. Electives plus emphasis requirements must total at least 34 units.
   - Electives may be selected from among the following options:
     - Any ERTH course numbered 400 or higher
     - Up to 3 units of any of the following courses:
       - an Historical Geology course (or equivalent) from a community college
       - Any 300-level ERTH course
       - GEOG 312, GEOG 313, GEOG 314, GEOG 317, GEOG 500GW, GEOG 602, GEOG 603, GEOG 506, GEOG 610, GEOG 620, GEOG 621, GEOG 625, GEOG 629, or GEOG 642
       - Any BIOL, CHEM, CSC, ENGR, MATH, or PHYS course numbered 200 or higher, or ENGR 103
       - Any one, non-GE course not listed above, with the approval of a Department advisor
   - (When choosing electives, keep in mind that SF State requires all students to complete at least 40 units of upper-division coursework to graduate.)
4. Take ERTH 697 if selecting Honors Thesis as the Major Culminating Experience. Take University Elective if selecting either ERTH 695 - Senior Project or Field Geology as the Major Culminating Experience.
5. Four unit Field Geology option typically takes place during the summer following the 4th semester.
6. Consult with a department advisor about selection of ERTH course for UD-B.

### To Do at SF State:

Enough total units to reach 120 minimum for graduation; 40 units minimum at the upper-division level; to include the following:

**University-Wide Requirements: 9-15 units**
- Upper-Division GE (9 units): Courses required for the major may double-count if approved for UD GE.
- Students transferring with the AS-T in Geology are not required to fulfill SF State Studies or Complementary Studies requirements.

**Earth Sciences Major (Emphasis in Geology): 39-44 units**

CHEM 115/CHIM 215/CHIM 216, MATH 226, ERTH 210, ERTH 500, ERTH 505, and 2 units of Geology emphasis electives, 1 unit of 4 units of Historical Geology, and 1 unit of 4 units of Calculus II in the Geology AS-T met in transfer.

- Basic Science & Math Foundation (8 units in PHYS): If some or all PHYS completed before transfer, consult with a major advisor about appropriate course choices.
- Earth Sciences Core/GWAR (8 units): Three of the 4 units of Historical Geology in the AS-T substitute for ERTH 500, and 3 of the 4 units of Calculus II in the Geology AS-T substitute for ERTH 505.
- Geology Emphasis (14 units)
- Electives (5-9 units): One unit of 4 units of Historical Geology and 1 unit of Calculus II in the Geology AS-T satisfy 2 units of the 11 unit elective requirement; if taken before transfer, Mineralogy satisfies 4 units of the elective requirement. If Mineralogy completed before transfer, consult with major advisor about appropriate course choices.)
• Culminating Experience (4-5 units): Take ERTH 690 (1 unit) along with one of the following three options: Senior Honors Thesis (ERTH 697/ERTH 698 (2 units each)); Senior Project (ERTH 695, 3 units); or Field Geology course (4 units) offered as a summer field camp, typically the summer following the 4th semester.

University Electives: 4 or more units

Depends on course choices made at the community college, how transferred units are applied to the requirements above, Culminating Experience option selected, and course choices at SF State - some courses may meet more than one requirement, e.g., both in UD GE and in the major.