BACHELOR OF SCIENCE
IN EARTH SCIENCES:
OCEAN, WEATHER AND
CLIMATE EMPHASIS – GEOL
ASSOCIATE DEGREE FOR
TRANSFER (ADT) 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 500, MATH 226, MATH 227, 5 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 (http://bulletin.sfsu.edu/undergraduate-admissions/transfer-students/).

To Do at SF State:

Enough total units to reach 120 minimum for graduation; 30 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 Ocean, Weather, and Climate): 41-44 Units
CHEM 115, MATH 226, MATH 227, ERTH 500, and 10 units of Ocean, Weather, and Climate emphasis electives (5 units of CHEM 215/CHEM 216, 1 unit of 4 units of Historical Geology, and 4 units of Physical Geology 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 (11 units): Three of the 4 units of Historical Geology in the AS-T substitute for ERTH 500.
- Ocean, Weather, and Climate Emphasis (17-18 units): Four units of Calculus II in the Geology AS-T count toward the Emphasis requirements.
- Electives (1-2 units): Five units of CHEM 215/CHEM 216, 1 unit of 4 units of Historical Geology, and 4 units of Physical Geology in the Geology AS-T satisfy 10 units of the 11-12-unit elective requirement.
- Culminating Experience (4-5 units): Take ERTH 690 (1 unit) along with one of the following two options: Senior Honors Thesis (ERTH 697/ERTH 698 (2 units each), or Senior Project (ERTH 695, 3 units).

University Electives: 3 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., UD GE and the major.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERTH 205</td>
<td>Techniques in Earth Sciences (Major Core)</td>
<td>2</td>
</tr>
<tr>
<td>ERTH 400</td>
<td>Earth Systems I (Major Core)</td>
<td>3</td>
</tr>
<tr>
<td>Select One Set of Courses (Science and Math Foundation):</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>PHYS 111 &amp; PHYS 112</td>
<td>General Physics I and General Physics I Laboratory (B1, B3)</td>
<td></td>
</tr>
<tr>
<td>PHYS 220 &amp; PHYS 222</td>
<td>General Physics with Calculus I and General Physics with Calculus I Laboratory (B1, B3)</td>
<td></td>
</tr>
<tr>
<td>Ocean, Weather, and Climate Emphasis Requirement – Select One:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ERTH 335</td>
<td>Global Warming (UD-B, ES, GP)</td>
<td></td>
</tr>
<tr>
<td>ERTH 360</td>
<td>California Weather Events (UD-B, ES, GP)</td>
<td></td>
</tr>
</tbody>
</table>
Bachelor of Science in Earth Sciences: Ocean, Weather and Climate Emphasis  
- GEOL Associate Degree for Transfer (ADT) Roadmap

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERTH 365</td>
<td>Extreme Weather in a Warming World (UD-B, ES, GP)</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERTH 260</td>
<td>Physical Processes in the Atmosphere (Major Emphasis, B1, B3, ES, GP)</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>ERTH 505</td>
<td>Quantitative Methods in Earth Sciences (Major Core)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ERTH 600GW</td>
<td>Earth's Climate History - GWAR (Major Core)</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Select One Set of Courses (Science and Math Foundation):  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 121 &amp; 122</td>
<td>General Physics II and General Physics II Laboratory</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>PHYS 240 &amp; 242</td>
<td>General Physics with Calculus III and General Physics with Calculus III Laboratory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Third Semester

Ocean, Weather, and Climate Emphasis Requirement – Take Two  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERTH 697</td>
<td>Undergraduate Research (Major Culminating Experience)</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

or University Elective  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ocean, Weather, and Climate Emphasis Elective (2 units)</td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

U.S. and California Government  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ocean, Weather, and Climate Emphasis Elective (2 units)</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

U.S. and California Government  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>GE Area UD-C: Upper-Division Arts and/or Humanities</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Fourth Semester

Ocean, Weather, and Climate Emphasis Requirement – Take One  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERTH 690</td>
<td>Earth Sciences Capstone Presentation (Major Culminating Experience)</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Major Culminating Experience - Select One:  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERTH 695</td>
<td>Senior Project</td>
<td></td>
<td>2-3</td>
</tr>
<tr>
<td>ERTH 698</td>
<td>Senior Thesis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GE Area UD-D: Upper-Division Social Sciences  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>US History</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

or University Elective if US History met in transfer  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Elective</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Units  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Units</td>
<td></td>
<td></td>
<td>60-61</td>
</tr>
</tbody>
</table>

1 PHYS 111/PHYS 112 are prerequisites for PHYS 121/PHYS 122. PHYS 220/PHYS 222 are prerequisites for PHYS 240/PHYS 242.

2 Ocean, Weather & Climate Emphasis Requirements
   Select three courses from the following:
   ERTH 430 (units)
   ERTH 434 Coastal Processes (3 units)
   ERTH 465 Weather Analysis and Forecasting I (4 units)
   ERTH 470 Physical Oceanography (4 units)
   ERTH 535 Planetary Climate Change (4 units)

3 Take ERTH 697 if selecting Honors Thesis as Major Culminating Experience. Take University Elective if selecting ERTH 695 - Senior Project as Major Culminating Experience.

4 Ocean, Weather, and Climate Emphasis Elective (2 units)
   Select (upon advisement) additional Ocean, Weather, and Climate emphasis electives needed to reach 34 units. (May include courses from the list above not selected to meet emphasis requirements.)