

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, EARTH 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

- American Institutions (0-6 units): US History, US Government, California State and Local Government requirements if not taken before transfer.
- 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, EARTH 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 EARTH 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 EARTH 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.

Course	Title	Units
First Semester		
ERTH 205	Techniques in Earth Sciences (Major Core)	2
ERTH 400	Earth Systems I (Major Core)	3
Select One Set of Courses (Science and Math Foundation): ¹		4
PHYS 111 & PHYS 112	General Physics I and General Physics I Laboratory (B1, B3)	
PHYS 220 & PHYS 222	General Physics with Calculus I and General Physics with Calculus I Laboratory (B1, B3)	
Ocean, Weather, and Climate Emphasis Requirement – Select One:		3
ERTH 335	Global Warming (UD-B, ES, GP)	
ERTH 360	California Weather Events (UD-B, ES, GP)	

ERTH 365	Extreme Weather in a Warming World (UD-B, ES, GP)	3
University Elective		3
		Units 15
Second Semester		
ERTH 260	Physical Processes in the Atmosphere (Major Emphasis, B1, B3, ES, GP)	4
ERTH 505	Quantitative Methods in Earth Sciences (Major Core)	3
ERTH 600GW	Earth's Climate History - GEAR (Major Core)	3
Select One Set of Courses (Science and Math Foundation): ¹		4
PHYS 121 & PHYS 122	General Physics II and General Physics II Laboratory	
PHYS 240 & PHYS 242	General Physics with Calculus III and General Physics with Calculus III Laboratory	
		Units 14
Third Semester		
Ocean, Weather, and Climate Emphasis Requirement – Take Two ²		6
ERTH 697	Undergraduate Research (Major Culminating Experience)	2
or University Elective ³		
Ocean, Weather, and Climate Emphasis Elective (2 units) ⁴		2
U.S. and California Government		3
or University Elective if US/CA Government met before transfer		
GE Area UD-C: Upper-Division Arts and/or Humanities		3
		Units 16
Fourth Semester		
Ocean, Weather, and Climate Emphasis Requirement – Take One ²		3
ERTH 690	Earth Sciences Capstone Presentation (Major Culminating Experience)	1
Major Culminating Experience - Select One:		2-3
ERTH 695	Senior Project	
ERTH 698	Senior Thesis	
GE Area UD-D: Upper-Division Social Sciences		3
US History		3
or University Elective if US History met in transfer		
University Elective		3
		Units 15-16
		Total Units 60-61

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 EARTH 697 if selecting Honors Thesis as Major Culminating Experience. Take University Elective if selecting EARTH 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.)