

# BACHELOR OF SCIENCE IN BIOLOGY: CONCENTRATION IN MARINE BIOLOGY AND LIMNOLOGY – BIOL 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 Biology. Thirty-two units in the major (BIOL 230, BIOL 240, CHEM 115, CHEM 215, CHEM 216, MATH 226, and the required PHYS sequence) and 33 units of lower-division GE requirements 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/>).

Course	Title	Units
<b>First Semester</b>		
CHEM 130	General Organic Chemistry (Major Lower-Division)	3
US History ( <a href="http://bulletin.sfsu.edu/undergraduate-education/graduation-requirements/#USHaGR">http://bulletin.sfsu.edu/undergraduate-education/graduation-requirements/#USHaGR</a> ) or University Elective if US History met before transfer		3
GE Area C		3
University Elective - Take Two		6
		<b>Units</b>
		<b>15</b>
<b>Second Semester</b>		
BIOL 355	Genetics (Major Upper-Division) <sup>3</sup>	3
BIOL 458	Biometry (Major Upper-Division)	4
BIOL 525 or BIOL 630	Plant Physiology (Major Upper-Division) or Animal Physiology	3
GE Area D		3
GE Area UD-C: Upper-Division Arts and/or Humanities		3
		<b>Units</b>
		<b>16</b>
<b>Third Semester</b>		
BIOL 337	Evolution (Major Upper-Division)	3
GE Area UD-D: Upper-Division Social Sciences		3
Select 3-5 units on advisement (Major Upper-Division):		3-5
BIOL 534	Wetland Ecology	
BIOL 580	Limnology	
BIOL 582	Biological Oceanography	
BIOL 585 & BIOL 586	Marine Ecology and Marine Ecology Laboratory	
University Elective		3
		<b>Units</b>
		<b>14</b>
<b>Fourth Semester</b>		
Major Upper-Division Electives (14-17 units) <sup>2</sup>		14-17
		<b>Units</b>
		<b>15</b>
		<b>Total Units</b>
		<b>60</b>

<sup>1</sup> BIOL 355 satisfies GE Area UD-B: Upper-Division Physical and/or Life Sciences.

<sup>2</sup> **Upper-Division Electives (14-17 units)**  
 BIOL 502 Biology of the Algae (3 units)  
 BIOL 526 Plant Molecular Physiology Laboratory (2 units)  
 BIOL 532 Restoration Ecology (3 units)  
 BIOL 555 Marine Invertebrate Zoology (4 units)  
 BIOL 556 Natural History of Marine Invertebrates (4 units)  
 BIOL 570GW Biology of Fishes - GWAR (4 units)\*  
 BIOL 575 Fisheries Biology (3 units)  
 BIOL 584 Marine Microbial Ecology Laboratory (1 units)  
 BIOL 586 Marine Ecology Laboratory (2 units)  
 BIOL 631GW Animal Physiology Laboratory - GWAR (4 units)\*  
 CHEM 680 Chemical Oceanography (3 units)  
 EARTH 434 Coastal Processes (3 units)  
 EARTH 642 Watershed Assessment and Restoration (4 units)

\* Students are required to complete at least one GWAR course in order to graduate.

## 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: 15–18 Units

- American Institutions (0-6 units): US History, US Government, CA Government.
- Lower-Division GE (6 units) - Area C (3 units in any subarea) and Area D (3 units). D2 courses satisfy US History; D3 courses satisfy US/CA Government.
- Upper-Division GE (9 units) - Courses may satisfy the US History or US/CA Government requirements, and UD-C or UD-D at the same time, if approved for multiple areas.
- Students entering this major with the AS-T in Biology are not required to fulfill SF State Studies or Complementary Studies requirements.

### Biology – Marine Biology and Limnology Major: 36–37 Units

BIOL 230, BIOL 240, MATH 226, all PHYS, CHEM 115, CHEM 215, and CHEM 216 met in transfer.

- Lower-Division Requirements (3 units): CHEM 130
- Major Upper-Division Requirements (16-17 units)
- Major Upper-Division Electives – includes GWAR (14-17 units) – upon advisement.

### University Electives: 10 or More Units

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