

# BACHELOR OF SCIENCE IN BIOLOGY: CONCENTRATION IN ECOLOGY, EVOLUTION, AND CONSERVATION BIOLOGY – BIOL 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 Biology. Twenty-three units in the major (BIOL 230, BIOL 240, CHEM 115, 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/>).**

## 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: 15–21 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).
- 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 – Ecology, Evolution, and Conservation Biology Major: 36-39 Units

Completed: BIOL 230, BIOL 240, CHEM 115, MATH 226, and PHYS 111/PHYS 112.

- Lower-Division Requirements (1 unit): BIOL 231
- Major Upper-Division Requirements/GWAR (17-20 units)
- Ecology and Evolution Electives (9 units)
- Physiology and Additional Electives (9 units)

### 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.

Course	Title	Units
<b>First Semester</b>		
BIOL 231	Advising for Success as a Biology Major (Major Lower-Division Core)	1
BIOL 355	Genetics (Major Upper-Division Core)	3
BIOL 458	Biometry (Major Upper-Division Core)	4
BIOL 482	Ecology (Major Upper-Division Core)	4
GE Area D		3
		<b>Units</b>
		<b>15</b>
<b>Second Semester</b>		
BIOL 337	Evolution (Major Upper-Division Core)	3
GWAR Option - Select One <sup>1</sup>		3
GE Area D		3
GE Area UD-C: Upper-Division Arts and/or Humanities		3

University Elective	3
<b>Units</b>	<b>15</b>
<b>Third Semester</b>	
Ecology Elective (9 units total) <sup>2</sup>	3
Physiology and Additional Electives (9 units total) - Take Two <sup>3</sup>	6
GE Area UD-D: Upper-Division Social Sciences	3
University Elective	3
<b>Units</b>	<b>15</b>
<b>Fourth Semester</b>	
Ecology Elective (9 units total) - Take Two <sup>2</sup>	6
Physiology and Additional Electives (9 units total) <sup>3</sup>	3
University Elective - Take Two	6
<b>Units</b>	<b>15</b>
<b>Total Units</b>	<b>60</b>

- <sup>1</sup> **GWAR Course - Select One**  
 BIOL 475GW Herpetology - GWAR (3 units)  
 BIOL 478GW Ornithology - GWAR (4 units)  
 BIOL 529GW Plant Ecology - GWAR (4 units)  
 BIOL 570GW Biology of Fishes - GWAR (4 units)  
 BIOL 670GW Ecology and Evolution of Marine Systems I - GWAR (6 units)

- <sup>2</sup> **Ecology and Evolution Electives - 9 units**  
 BIOL 380 Evolutionary Developmental Biology (3 units)  
 BIOL 453 General Parasitology (3 units)  
 BIOL 460 General Entomology (4 units)
- BIOL 470 Natural History of Vertebrates (4 units)  
 BIOL 475GW Herpetology - GWAR (3 units)  
 BIOL 478GW Ornithology - GWAR (4 units)  
 BIOL 490 Ecology of Infectious Diseases (4 units)  
 BIOL 500 Evolution and Diversity of Plants (4 units)  
 BIOL 502 Biology of the Algae (3 units)  
 BIOL 504 Biology of the Fungi (4 units)  
 BIOL 505 Plant Structure and Function (3 units)  
 BIOL 514 Plant Biodiversity and California Field Botany (5 units)  
 BIOL 529GW Plant Ecology - GWAR (4 units)  
 BIOL 530 Conservation Biology (3 units)  
 BIOL 532 Restoration Ecology (3 units)  
 BIOL 534 Wetland Ecology (4 units)  
 BIOL 555 Marine Invertebrate Zoology (4 units)  
 BIOL 570GW Biology of Fishes - GWAR (4 units)  
 BIOL 577 Climate and Ecological Interactions (4 units)  
 BIOL 580 Limnology (3 units)  
 BIOL 582 Biological Oceanography & Limnology (4 units)  
 BIOL 585 Marine Ecology (3 units)  
 BIOL 600 Animal Behavior (3 units)  
 BIOL 670GW Ecology and Evolution of Marine Systems I - GWAR (6 units)  
 BIOL 671 Ecology and Evolution of Marine Systems II (6 units)

- <sup>3</sup> **Physiology and Additional Electives - 9 units**  
 BIOL 315 Field Methods in Ecology and Evolution (1 units)  
 BIOL 327 AIDS: Biology of the Modern Epidemic (3 units) (UD-B, GP)  
 BIOL 328 Human Anatomy (4 units)  
 BIOL 349 Bioethics (3 units) (UD-B, SJ)  
 BIOL 350 Cell Biology (3 units)  
 BIOL 356 Honors Genetics (2 units)  
 BIOL 357 Molecular Genetics (3 units)  
 BIOL 358 Forensic Genetics: Math Matters (4 units)  
 BIOL 382 Developmental Biology (3 units)  
 BIOL 401 General Microbiology (3 units)

BIOL 420 General Virology (3 units)  
BIOL 425 Emerging Diseases (3 units)  
BIOL 430 Medical Microbiology (3 units)  
BIOL 435 Immunology (3 units)  
BIOL 436 Immunology Laboratory (2 units)  
BIOL 442 Microbial Physiology (3 units)  
BIOL 443 Microbial Physiology Laboratory (2 units)  
BIOL 446 Microbial Genomics (4 units)  
BIOL 454 Parasitology Laboratory (1 units)  
BIOL 475GW Herpetology - GVAR (3 units)  
BIOL 478GW Ornithology - GVAR (4 units)  
BIOL 490 Ecology of Infectious Diseases (4 units)  
BIOL 500 Evolution and Diversity of Plants (4 units)  
BIOL 502 Biology of the Algae (3 units)  
BIOL 504 Biology of the Fungi (4 units)  
BIOL 505 Plant Structure and Function (3 units)  
BIOL 508 Plants and Human Affairs (3 units)  
BIOL 514 Plant Biodiversity and California Field Botany (5 units)  
BIOL 525 Plant Physiology (3 units)  
BIOL 526 Plant Molecular Physiology Laboratory (2 units)  
BIOL 532 Restoration Ecology (3 units)  
BIOL 534 Wetland Ecology (4 units)  
BIOL 555 Marine Invertebrate Zoology (4 units)  
BIOL 570GW Biology of Fishes - GVAR (4 units)  
BIOL 572 Colloquium in Ecology, Evolution, and Conservation (2 units)  
BIOL 577 Climate and Ecological Interactions (4 units)  
BIOL 580 Limnology (3 units)  
BIOL 585 Marine Ecology (3 units)  
BIOL 586GW Marine Ecology Laboratory - GVAR (4 units)  
BIOL 600 Animal Behavior (3 units)  
BIOL 612 Human Physiology (3 units)  
BIOL 617 Environmental Physiology (3 units)  
BIOL 620 Endocrinology (3 units)  
BIOL 621 Reproductive Physiology (3 units)  
BIOL 622 Hormones and Behavior (3 units)  
BIOL 630 Animal Physiology (3 units)  
BIOL 638 Bioinformatics and Sequence Analysis (4 units)  
BIOL 640 Cellular Neurosciences (3 units)  
BIOL 642 Neural Systems Physiology (3 units)  
BIOL 644 LEADerS Service Learning Course: Learners Engaged in Advocating for Diversity in Science (4 units)  
or BIOL 654 Peer Assistants for Learning Science (PALS) (4 units)  
BIOL 670GW Ecology and Evolution of Marine Systems I - GVAR (6 units)  
BIOL 671 Ecology and Evolution of Marine Systems II (6 units)  
BIOL 699 Independent Study in Biology (1-3 units)