

BACHELOR OF SCIENCE IN BIOLOGY: CONCENTRATION IN PHYSIOLOGY – 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. Thirty-two units in the major (BIOL 230/BIOL 240, CHEM 115/CHEM 215/CHEM 216, MATH 226, 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 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 also satisfy US History; D3 courses also satisfy US/CA Government.
- Upper-Division GE (9 units): Courses may satisfy both American Institutions and Upper-Division GE 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 – Physiology Major: 29–32 Units

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

- Lower-Division Requirements (4–7 units): Organic Chemistry sequence, BIOL 231
- Upper-Division Requirements (25 units); includes
 - Upper-division requirements (15 units): BIOL 355; BIOL 337; BIOL 612 or BIOL 630; BIOL 613GW or BIOL 631GW; CHEM 340 or CHEM 349
 - Physiology Electives (10 units) – upon advisement. See note 3.

University Electives: 16 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
First Semester		
BIOL 231	Advising for Success as a Biology Major (Major Lower-Division Core)	1
Select One (Major Lower-Division Core): ¹		3
CHEM 130	General Organic Chemistry	
CHEM 233	Organic Chemistry I	
US History (http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#USHaGR) or University Elective if US History met before transfer		3
GE Area C		3
GE Area D		3
University Elective		3
	Units	16
Second Semester		
BIOL 355	Genetics (Major Upper-Division Core) ²	3
Select One (Major Upper-Division Core):		3
BIOL 612	Human Physiology	

BIOL 630	Animal Physiology	
Select One (Major Lower-Division Core):		3
CHEM 335	Organic Chemistry II	
SF State Studies or University Elective (if CHEM 130 taken)		
Select One (Major Upper-Division Core):		3
CHEM 340	Biochemistry I	
CHEM 349	General Biochemistry	
GE Area UD-C: Upper-Division Arts and/or Humanities		3
	Units	15
Third Semester		
BIOL 337	Evolution (Major Upper-Division Core)	3
Select One (Major Upper-Division Core):		3-4
BIOL 613GW	Human Physiology Laboratory - GVAR	
BIOL 631GW	Animal Physiology Laboratory - GVAR	
Major Upper-Division Electives (10 Units Total) ³		4
GE Area UD-D: Upper-Division Social Sciences		3
	Units	14
Fourth Semester		
Major Upper-Division Electives (10 Units Total) - Take Two ³		6
University Elective - Take Three		9
	Units	15
	Total Units	60

¹ CHEM 233 is a prerequisite for CHEM 335. If students plan to take CHEM 335, they must take CHEM 233.

² BIOL 355 satisfies GE Area UD-B: Upper-Division Physical and/or Life Sciences.

³ **Guided Electives (10 units)**

Select 10 units from the classes below; at least 6 units must be chosen from among the Group A courses.

Group A

BIOL 328 Human Anatomy (4 units)

BIOL 350 Cell Biology (3 units)

BIOL 616 Cardiorespiratory Physiology (3 units)

BIOL 617 Environmental Physiology (3 units)

BIOL 618 Biology of Aging (3 units)

BIOL 620 Endocrinology (3 units)

BIOL 621 Reproductive Physiology (3 units)

BIOL 622 Hormones and Behavior (3 units)

BIOL 623 Pharmacology (3 units)

BIOL 640 Cellular Neurosciences (3 units)

BIOL 642 Neural Systems Physiology (3 units)

Group B

BIOL 435 Immunology (3 units)

BIOL 453 General Parasitology (3 units)

BIOL 454 Parasitology Laboratory (1 unit)

BIOL 525 Plant Physiology (3 units)

BIOL 526 Plant Molecular Physiology Laboratory (2 units)

BIOL 615 Molecular Pathophysiology (3 units)

BIOL 644 LEADeRS Service Learning Course: Learners Engaged in Advocating for Diversity in Science (4 units)

or BIOL 652 Science Education Partners in Biology (4 units)

or BIOL 654 Peer Assistants for Learning Science (PALS) (4 units)

BIOL 699 Independent Study in Biology (1-3 units)