BACHELOR OF SCIENCE IN BIOLOGY: CONCENTRATION IN PHYSIOLOGY ROADMAP

120 Total Units Required
Minimum Number of Units in the Major: 59

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance.

Course	Title	Units
First Semester		
CHEM 115	General Chemistry I (Major Lower-Division Core)	5
ENG 114	Writing the First Year: Finding Your Voice (A2) [1]	3
MATH 226	Calculus I (Major Lower-Division Core, B4) [2]	4
GE Area A [3]		3
	Units	**15**
Second Semester		
BIOL 230	Introductory Biology I (Major Lower-Division Core)	5
BIOL 231	Advising for Success as a Biology Major (Major Lower-Division Core)	1
CHEM 215	General Chemistry II: Quantitative Applications of Chemistry Concepts (Major Lower-Division Core)	3
GE Area A		3
GE Area E		3
	Units	**15**
Third Semester		
BIOL 240	Introductory Biology II (Major Lower-Division Core) [4]	5
Select One (Major Lower-Division Core): [5]		3
CHEM 130	General Organic Chemistry	
CHEM 233	Organic Chemistry I	
Select One Set of Courses (Major Lower-Division Core): [6]		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)	
GE Area C		3
	Units	**15**
Fourth Semester		
Select One (Major Lower-Division Core): [5]		3
CHEM 335	Organic Chemistry II	
SF State Studies or University Elective (if CHEM 130 taken)		
Select One Set of Courses (Major Lower-Division Core): [6]		4
PHYS 121 & PHYS 122	General Physics II and General Physics II Laboratory	
PHYS 230 & PHYS 232	General Physics with Calculus II and General Physics with Calculus II Laboratory	
GE Area C - Take Two		6
GE Area D		3
	Units	**16**
Fifth Semester		
BIOL 355	Genetics (Major Upper-Division Core)	3
Select One (Major Upper-Division Core):		3
BIOL 612	Human Physiology	
BIOL 630	Animal Physiology	
GE Area D		3
GE Area F ±		3
U.S. and California Government (http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg)		3
	Units	**15**
Sixth Semester		
Select One (Major Upper-Division Core):		3
CHEM 340	Biochemistry I	
CHEM 349	General Biochemistry	
GE Area UD-D: Upper-Division Social Sciences		3
SF State Studies or University Elective - Take Three		9
	Units	**15**
Seventh Semester		
BIOL 337	Evolution (Major Upper-Division Core)	3
Select One (Major Upper-Division Core):		3-4
BIOL 613GW	Human Physiology Laboratory - GWAR	
BIOL 631GW	Animal Physiology Laboratory - GWAR	
Major Upper-Division Electives (10 Units Total) [7]		6
GE Area UD-C: Upper-Division Arts and/or Humanities		3
	Units	**15-16**
Eighth Semester		
Major Upper-Division Electives (10 Units Total) [7]		4

SF State Studies or University Elective – Take Three		10
	Units	**14**
	Total Units	**120-121**

1 ENG 114 can only be taken if you complete Directed Self-Placement (DSP) and select ENG 114; if you choose ENG 104/ENG 105 through DSP you will satisfy A2 upon successful completion of ENG 105 in the second semester; multilingual students may be advised into alternative English courses.

2 To determine the best B4 course option, students should complete the online advising activity at mathadvising.sfsu.edu (https://mathadvising.sfsu.edu/). Questions? Contact Gator Smart Start. (https://gatorsmartstart.sfsu.edu/)

3 To avoid taking additional units, it is recommended that you meet the **SF State Studies** (AERM, GP, ES, SJ) requirements within your GE or major.

4 GE Area B2 (Life Science) is satisfied upon completion of BIOL 240.

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

6 PHYS 111/PHYS 112 are prerequisites for PHYS 121/PHYS 122. PHYS 220/PHYS 222 are prerequisites for PHYS 230/PHYS 232.

7 **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 654 Peer Assistants for Learning Science (PALS) (4 units)
BIOL 699 Independent Study in Biology (1-3 units)

± Given catalog rights, fall 2023 transfer students do not need to complete an Area F course.