

Department of Biology Graduation Checklist
<https://biology.sfsu.edu/advising/undergraduate>

LD= _____
 UD= _____

Student: _____ E-mail _____
Last First
 Advisor: _____ Phone _____

BACHELOR OF SCIENCE IN BIOLOGY: CONCENTRATION IN CELL & MOLECULAR BIOLOGY

Course is 3 units unless otherwise noted.

Lower Division Requirements (32-35 units)

Sp/Su 24 based on 2023 offerings

Class	Prerequisites (must be completed with a C- or better, unless otherwise stated; however, Chemistry prerequisite courses must be completed with a C or better)	Class Name	Units	Sp/Su 24 based on 2023 offerings			v	on DPR?
				Fa 23	Sp 24	Su 24		
BIOL 230		Introductory Biology I	5	yes	yes	no		
BIOL 231		Advising for Success as a Biology Major	1	yes	yes	no		
BIOL 240	Biol 230	Introductory Biology II [Meets GE Areas B2 (Life Science) & B3 (Lab Science)]	5	yes	yes	no		
CHEM 115	see http://bulletin.sfsu.edu/courses/chem/	General Chemistry I: Essential Concepts of Chemistry	5	yes	yes	yes		
CHEM 215/216	Chem 115	General Chemistry II: Quant. Appl. of Chem. Conc./Lab (3/2)	5	yes	yes	21 5 vec		
MATH 226	see http://bulletin.sfsu.edu/courses/math/	Calculus I	4	yes	yes	yes		
PHYS 111/112	see http://bulletin.sfsu.edu/courses/phys/	General Physics I/Laboratory (3/1)	4	yes	yes	yes		
Select one organic chemistry sequence (3-6 units):								
CHEM 130	Chem 115	General Organic Chemistry [meets GE Area B1]		yes	yes	yes		
CHEM 233 and CHEM 335	see http://bulletin.sfsu.edu/courses/chem/	Organic Chemistry I [meets GE Area B1] and Organic Chemistry II		yes	yes	yes		

Total lower division requirements (units): **32 - 35**

Upper Division Requirements (19 units)

Class	Prerequisites	Class Name	Units	Sp/Su 24 based on 2023 offerings			v	on DPR?
				Fa 23	Sp 24	Su 24		
BIOL 337	Biol 230 + Biol 240 + Biol 355	Evolution	3	yes	yes	no		
BIOL 350	Biol 230 + Biol 240 + Chem 115	Cell Biology	3	yes	yes	yes		
BIOL 351GW	Biol 350 + Biol 355 + GE Area 2	Experiments in Cell and Molecular Biology - GVAR (4)	4	yes	yes	no		
BIOL 355	Biol 230 + Biol 240 + Chem 115	Genetics [meets GE UD-B requirement]	3	yes	yes	yes		
BIOL 357	Biol 355	Molecular Genetics	3	yes	yes	no		
Select one biochemistry course (3 units):								
CHEM 340	Chem 215 + Chem 233 + Chem 335 with grades of C or better	Biochemistry I		yes	yes	no		
CHEM 349	Chem 215 (grade C or better) + [Chem 130 (grade C or better) or Chem 335 (grade of C- or better)]	General Biochemistry		yes	yes	yes		

Upper Division Requirements (units) **19**

Upper Division Electives upon advisement (9 units)

At least one elective course must have an upper division laboratory component.

Graduate level courses may be used upon advisement

Class	Prerequisites	Class Name	Units	Sp/Su 24 based on 2023 offerings			v	on DPR?
				Fa 23	Sp 24	Su 24		
BIOL 328 [†]	Biol 230	Human Anatomy (4)		yes	yes	no		
BIOL 332	Biol 230 + Biol 240 + Biol 355, GPA 3.0 or higher	Health Disparities in Cancer		yes	no	no		
BIOL 344GW	Biol 230 + Biol 240 + GE Area 2, GPA 3.0 or higher	Research Skills - GVAR		no	no	no		
BIOL 349	GE Areas A1*, A2*, A3*, and B4*	Bioethics		no	no	no		
BIOL 356	Biol 355 with a grade of B or better	Honors Genetics (2)		no	no	no		
BIOL 358	Biol 230 + Math 199	Forensic Genetics: Math Matters (4)		no	no	no		
BIOL 380	Biol 355 (Biol 337 is recommended)	Evolutionary Developmental Biology		no	no	no		
BIOL 382	Biol 350 + Biol 355, GPA 3.0 or higher	Developmental Biology		no	no	no		
BIOL 391 [†]	One college-level physics course	Microscopy and Photomicrography (2)		no	no	no		
BIOL 401	Biol 230 + Biol 240 + Chem 233	General Microbiology		yes	yes	no		
BIOL 411	Biol 355 + BIOL 401 + BIOL 402GW + [CHEM 340 or CHEM 349]	Environmental Microbiology		no	no	no		
BIOL 420	Biol 401 + Biol 402GW	General Virology		yes	no	no		
BIOL 425	Biol 230 + Biol 240 + [Biol 355 or Biol 401 or Biol 350] + Chem 130	Emerging Diseases		no	yes	no		
BIOL 430	Bio 401 with a C or better	Medical Microbiology		no	yes	no		
BIOL 431 [†]	Biol 401 + Biol 402GW + Chem 349	Medical Microbiology Lab (2)		no	yes	no		
BIOL 435	Biol 350 or Biol 401	Immunology		yes	yes	no		

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			on			
			Fa	Sp	Su	
			23	24	24	
			v	v	v	DPR?
BIOL 436 [‡]	Biol 402GW, concurrent enrollment in Biol 435	Immunology Laboratory (2)	no	no	no	
BIOL 442	Biol 401 + Biol 402GW + Chem 349	Microbial Physiology	no	no	no	
BIOL 443 [‡]	Biol 442 (may be taken concurrently)	Microbial Physiology Laboratory (2)	no	no	no	
BIOL 446 [‡]	Biol 401 + Biol 402GW + Biol 355	Microbial Genomics (4)	no	yes	no	
BIOL 453	Biol 230 + Biol 240 + Biol 355	General Parasitology	yes	no	no	
BIOL 454 [‡]	Biol 453 (may be taken concurrently)	Parasitology Laboratory (1)	yes	no	no	
BIOL 458	one college-level Biology course	Biometry (4)	yes	yes	no	
BIOL 482 [‡]	Biol 230 + Biol 240	Ecology (4)	yes	yes	no	
BIOL 490	Biol 230 + Biol 240	Ecology of Infectious Diseases (4)	no	yes	no	
BIOL 525	Biol 230 + Biol 240 + Chem 130	Plant Physiology	no	yes	no	
BIOL 526 [‡]	Biol 230 + Biol 240 + Chem 130	Plant Molecular Physiology Laboratory (2)	no	no	no	
BIOL 612	Biol 230 + Biol 240 + Chem 130 + Phys 121	Human Physiology	yes	yes	yes	
BIOL 615	Biol 230 + Biol 240 + Biol 612	Molecular Pathophysiology	no	no	no	
BIOL 619	Biol 212 or Biol 612	Pathophysiology	no	no	no	
BIOL 620	Biol 230 + Biol 240	Endocrinology	no	no	no	
BIOL 621	Biol 230 + Biol 240 + Biol 330 + Chem 130; Biol 492 or a vertebrate anatomy course recommended	Reproductive Physiology	yes	no	yes	
BIOL 622	Biol 230 + Biol 240	Hormones and Behavior	no	no	no	
BIOL 627	Biol 230 + Chem 115 + Phys 121	Biophysics	no	no	no	
BIOL 630	Biol 230 + Biol 240 + [Chem 130 or Chem 233]	Animal Physiology	yes	no	no	
BIOL 638 [‡]	Biol 230, GPA 3.0 or higher	Bioinformatics & Genome Annotation (4)	yes	yes	no	
BIOL 640	Biol 230 + Biol 240 + Chem 130 + Phys 121; Biol 350 and Biol 612 recommended	Cellular Neurosciences	yes	no	no	
BIOL 642	Biol 328 or Biol 612	Neural Systems Physiology	no	yes	no	
BIOL 644	Biol 230 + Biol 240 + [Biol 350 or Biol 355 or Biol 357]	LEADeRS Service Learning Course: Learners Engaged in Advocating for Diversity in Science (4)	no	no	no	
OR BIOL 654	Biol 230	Peer Assistants for Learning Science (4)	yes	yes	no	
BIOL 667 [‡]	Math 226; Biol 230 or Chem 215 with a grade of C or better	Optical Engineering for the Biological Sciences	no	no	no	
BIOL 699 [‡]	Restricted to senior Biology majors; consent of the department and instructor.	Independent Study in Biology (1-3 units) <i>requires faculty mentor's approval</i>	yes	yes	no	
CSC 306 [‡]	Restricted to Biology, Chemistry, and Biochemistry majors and pre-majors; upper-division standing; or permission of the instructor.	An Interdisciplinary Approach to Computer Programming	yes	yes	no	

[‡]meets upper division laboratory elective requirement

Upper Division Electives (units)

Course Num.	Course Title	Units

What course has student taken to meet GVAR? (typically Biol 351GW)

GVAR course must be completed with a C- or better to meet graduation requirements

	Required	Completed
Total upper division unit requirements (required and elective)	28	_____
Total units for major (minimum 60 units)	60-63	_____

Recommendations for targeted post-graduate plans

Health profession

Students must take the full year of organic chemistry with lab: Chem 233/234 and Chem 335/336.

Graduate programs

Students must take the full year of organic chemistry with lab: Chem 233/234 and Chem 335/336.

Students should complete at least two semesters of calculus and one semester of physical chemistry.

Student should consult with major advisor to optimize course plan for goals.