

**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)**

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				√	on DPR?
				Fa 21	Sp 22	Su 22		
BIOL 230		Introductory Biology I	5	yes	yes	no		
BIOL 231		Advising for Success as a Biology Major	1	yes	yes			
BIOL 240	Biol 230	Introductory Biology II [Meets GE Areas B2 (Life Science) & B3 (Lab Science)]	5	yes	yes	no		
CHEM 115	see <a href="http://bulletin.sfsu.edu/courses/chem/">http://bulletin.sfsu.edu/courses/chem/</a>	General Chemistry I: Essential Concepts of Chemistry	5	yes	yes	no		
CHEM 215/216	Chem 115	General Chemistry II: Quant. Appl.of Chem. Conc./Lab (3/2)	5	yes	yes	yes		
MATH 226	see <a href="http://bulletin.sfsu.edu/courses/math/">http://bulletin.sfsu.edu/courses/math/</a>	Calculus I	4	yes	yes	yes		
PHYS 111/112	see <a href="http://bulletin.sfsu.edu/courses/phys/">http://bulletin.sfsu.edu/courses/phys/</a>	General Physics I/Laboratory (3/1)	4	yes	yes	yes		
<b>Select one organic chemistry sequence (3-6 units):</b>								
CHEM 130	Chem 115	General Organic Chemistry [meets GE Area B1]		yes	yes	yes		
CHEM 233 and CHEM 335	see <a href="http://bulletin.sfsu.edu/courses/chem/">http://bulletin.sfsu.edu/courses/chem/</a>	Organic Chemistry I [meets GE Area B1] and Organic Chemistry II		yes	yes	yes		
			<b>Total lower division requirements (units):</b>	<b>32 - 35</b>				

**Upper Division Requirements (19 units)**

		Class Name	Units				√	on DPR?
				Fa 21	Sp 22	Su 22		
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 - GEAR (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		
<b>Select one biochemistry course (3 units):</b>			3					
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		
			<b>Upper Division Requirements (units)</b>	<b>19</b>				

**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 Name	Units				√	on DPR?
				Fa 21	Sp 22	Su 22		
BIOL 328 <sup>‡</sup>	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		no	no	no		
BIOL 344GW	Biol 230 + Biol 240 + GE Area 2, GPA 3.0 or higher	Research Skills - GEAR		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)		yes	yes	no		
BIOL 358	Biol 230 + Math 199	Forensic Genetics: Math Matters (4)		yes	no	no		
BIOL 380	Biol 355 (Biol 337 is recommended)	Evolutionary Developmental Biology		no	yes	no		
BIOL 382	Biol 350 + Biol 355, GPA 3.0 or higher	Developmental Biology		yes	yes	no		
BIOL 391 <sup>‡</sup>	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		no	yes	no		

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BIOL 425	Biol 230 + Biol 240 + [Biol 355 or Biol 401 or Biol 350] + Chem 130	Emerging Diseases		no	yes	no		
BIOL 430	Biol 401 with a C or better	Medical Microbiology		yes	no	no		
BIOL 431 <sup>†</sup>	Biol 401 + Biol 402GW + Chem 349	Medical Microbiology Lab (2)		no	yes	no		
BIOL 435	Biol 350 or Biol 401	Immunology		no	yes	no		
BIOL 436 <sup>†</sup>	Biol 402GW, concurrent enrollment in Biol 435	Immunology Laboratory (2)		no	no	no		
BIOL 442	Biol 401 + Biol 402GW + Chem 349	Microbial Physiology		yes	no	no		
BIOL 443 <sup>†</sup>	Biol 442 (may be taken concurrently)	Microbial Physiology Laboratory (2)		no	no	no		
BIOL 446	Biol 401 + Biol 402GW + Biol 355	Microbial Genomics (4)		yes	no	no		
BIOL 453	Biol 230 + Biol 240 + Biol 355	General Parasitology		yes	no	no		
BIOL 454 <sup>†</sup>	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 <sup>†</sup>	Biol 230 + Biol 240	Ecology (4)		yes	yes	no		
BIOL 490	Biol 230 + Biol 240	Ecology of Infectious Diseases (4)		no	no	no		
BIOL 525	Biol 230 + Biol 240 + Chem 130	Plant Physiology		yes	yes	no		
BIOL 526 <sup>†</sup>	Biol 230 + Biol 240 + Chem 130	Plant Molecular Physiology Laboratory (2)		no	yes	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		yes	yes	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	yes	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	yes	no		
BIOL 638 <sup>†</sup>	Biol 230, GPA 3.0 or higher	Bioinformatics & Genome Annotation (4)		no	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 699 <sup>†</sup>	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		

<sup>†</sup>meets upper division laboratory elective requirement

**Upper Division Electives (units)**

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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**

<b>Total upper division unit requirements (required and elective)</b>	<b>28</b>	_____
<b>Total units for major (minimum 60 units)</b>	<b>60-63</b>	_____

**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 take the full year of biochemistry: Chem 340 and Chem 341

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