

NATURAL SCIENCES, BS, BIOLOGY CONCENTRATION

Natural Sciences, Mathematics, and Engineering (nsme) (<https://catalog.csusb.edu/general-information/csub-information/school-natural-sciences-mathematics-engineering/>)

Natural Sciences Program (<https://catalog.csusb.edu/general-information/csub-information/school-natural-sciences-mathematics-engineering/natural-sciences-program/>)

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http://www.csusb.edu/natural_sciences/index.html (http://www.csusb.edu/natural_sciences/)

Program Maps for Natural Sciences, Mathematics, and Engineering (<https://programmmap.csusb.edu/academics/interest-clusters/4e942a6e-b8e4-4b60-a1ae-334235acc581/>)

Program Requirements

Code	Title	Units
General Education Requirements ⁷		
	First-Year Seminar (FYS)	2
	Lower Division Area A: Foundational Skills	9
	Lower Division Area B: Natural Sciences ⁷	0
	Lower Division Area C: Arts and Humanities	6
	Lower Division Area D: Social and Behavioral Sciences	3
	Lower Division Area E: Student Enrichment and Lifelong Learning (SELF) ⁸	0
	Lower Division Area F: Ethnic Studies	3
	American Institutions: Government and History	6
	Junior Year Diversity & Reflection (JYDR) ⁹	3
	Graduation Writing Assessment Requirement (GWAR) ¹⁰	0
	Upper Division Thematic Area C and D	6
	General Education Capstone ⁷	0
	<i>General Education Subtotal</i> ⁷	38
Core Coursework		
<i>Life Science</i>		
BIOL 2010	Introductory Biology - Cells	4
BIOL 2110	Introductory Biology - Animals	4
BIOL 2120	Introductory Biology - Plants	4
<i>Chemistry</i>		
CHEM 1000	Foundations of Chemistry	3
CHEM 1001	Foundations of Chemistry Laboratory	2
CHEM 1100	Foundations of Analytical Chemistry	2
CHEM 1600	Foundations of Physical Chemistry	2
CHEM 2300	Foundations of Organic Chemistry	3
<i>Earth and Planetary Science</i>		
GEOL 2010	Physical Geology	4

GEOL 2040	Historical Geology	4
PHYS 1609	Introduction to Astronomy	3
or GEOL 3080	Geomorphology	
<i>Engineering</i>		
SCI 3210	Fab Lab Teaching Internship	4
<i>Mathematics</i>		
Select one of the following:		4
MATH 1050	Precalculus I ¹	
MATH 1040	Precalculus I and II Combined ²	
MATH 1060	Precalculus II ²	
Select one of the following:		4
MATH 2010	Calculus for the Biological and Chemical Sciences I ³	
MATH 2510	Single Variable Calculus I	
<i>Physics</i>		
Select one of the following:		8
PHYS 2110 & PHYS 2120	College Physics I and College Physics II ⁴	
PHYS 2210 & PHYS 2220 & PHYS 2230	Physics for Scientists and Engineers I and Physics for Scientists and Engineers II and Physics for Scientists and Engineers III	
Biology Concentration		
BIOL 3010	General Genetics	3
BIOL 3020	General Physiology	3
BIOL 3110	General Ecology	3
BIOL 3120	Research Design and Analysis	4
BIOL 3410	General Microbiology	4
BIOL 4100	Evolution	3
BIOL 4918	Senior Seminar	1
or BIOL 4928	Senior Seminar	
<i>Human Physiology</i>		
BIOL 2220	Human Physiology	4
or BIOL 3550	Advanced Human Physiology	
<i>Elective</i>		
Select one of the following:		4
MATH 2020	Calculus for Biological & Chemical Sciences II ⁵	
BIOL 2210	Human Anatomy	
BIOL 3220	Human Pathophysiology ⁶	
<i>Major Subtotal</i>		84
Additional Units Needed Towards Graduation		1-3
Total Units		123-125

¹ Or Satisfaction of the entry-level Mathematics requirement **and** a score of at least 70 on the Math Placement Exam

² Or Satisfaction of the entry-level Mathematics requirement **and** a score of at least 80 on the Math Placement Exam

³ Recommended for Biology Concentration

⁴ Recommended

⁵ Or higher

⁶ Any BIOL 3220 Human Pathophysiology or Higher (≥ 3 units)

⁷ Some major requirements may be used to satisfy GE: GEOL 2010 Physical Geology satisfies Area B1; BIOL 2010 Introductory Biology - Cells satisfies Area B2; CHEM 1001 Foundations of Chemistry Laboratory Satisfies Area B3; MATH 2010 Calculus for the Biological and Chemical Sciences I satisfies the Quantitative Reasoning

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Foundational Skill (Area B4). BIOL 4918 Senior Seminar/BIOL 4928 Senior Seminar satisfies the GE Capstone.

8 The SELF Requirement is met by completing a General Education Area C or D course with a SELF component. (THTR 1008 Beginning Acting, PHIL 2329 Sexual Ethics /INST 2329 Sexual Ethics or PSYC 4358 Positive Psychology).

9 It is recommended that JYDR be satisfied by EDTE 3308 Socio-Cultural Foundations of Education

10 It is recommended that GVAR be satisfied with UD C (PHIL 3318 Professional Ethics)

See appropriate links at https://www.csub.edu/ge/Students1/General_Education_Requirements/index.html (https://catalog.csub.edu/academic-degrees-programs/undergraduate-majors/natural-sciences-bs-biology-concentration/%20https://www.csub.edu/ge/Students1/General_Education_Requirements/) for current lists of courses satisfying university-wide General Education requirements.