

# BA IN BIOLOGICAL SCIENCE

Units required for Major: 63-67

Total units required for BA: 120

## Program Description

The Department of Biological Sciences offers both undergraduate and graduate degree programs. At the undergraduate level, students are able to earn a Bachelor of Arts degree, a Bachelor of Science degree, or a Minor in Biological Sciences.

## Program Requirements

Code	Title	Units
<b>Required Lower Division Courses (37-41 Units)</b>		
BIO 1	Biodiversity, Evolution and Ecology <sup>1</sup>	5
BIO 2	Cells, Molecules and Genes	5
CHEM 1A	General Chemistry I <sup>1</sup>	5
CHEM 1B	General Chemistry II	5
Select one of the following:		3 -
		6
CHEM 20	Organic Chemistry Lecture–Brief Course <sup>2</sup>	
CHEM 24	Organic Chemistry Lecture I	
& CHEM 124	Organic Chemistry Lecture II	
Select one of the following:		3 -
		4
MATH 26A	Calculus I for the Social and Life Sciences	
MATH 30	Calculus I	
PHYS 5A	General Physics: Mechanics, Heat, Sound	4
PHYS 5B	General Physics: Light, Electricity and Magnetism, Modern Physics	4
STAT 1	Introduction to Statistics <sup>1</sup>	3
<b>Required Upper Division Courses (23 Units)</b>		
BIO 100	Introduction to Scientific Analysis	3
BIO 121	Molecular Cell Biology	3
BIO 139	General Microbiology	4
BIO 160	General Ecology	3
BIO 184	General Genetics	4
BIO 188	Evolution	3
CHEM 161	General Biochemistry <sup>3</sup>	3
<b>Elective Courses (3 Units)</b>		
Select one course from the following Structure and Function Electives:		3
BIO 104	Physiology of Human Reproduction	
BIO 122	Advanced Human Anatomy	
BIO 123	Neuroanatomy	
BIO 126	Comparative Vertebrate Morphology	
BIO 127	Developmental Biology	
BIO 128	Plant Anatomy and Physiology	
BIO 130	Histology	
BIO 131	Systemic Physiology	
BIO 132	Neurophysiology	
BIO 133	Cardiovascular, Respiratory and Renal Physiology	

BIO 135	Endocrinology	Total Units	63-67
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- <sup>1</sup> Course also satisfies General Education (GE)/Graduation Requirement.
- <sup>2</sup> CHEM 24 and CHEM 124 may be taken in lieu of CHEM 20. (CHEM 124 is not counted toward the 24 upper division unit requirement in the major.)
- <sup>3</sup> CHEM 160A and CHEM 160B may be taken in lieu of CHEM 161. Only three units of the package may be counted toward the upper division major requirement.

### Notes:

- Pre-Health Professional students should take the Chemistry and Math requirements as stated in the Pre-Health Professional Program section of this catalog.

## General Education Requirements <sup>1</sup>

Code	Title	Units
<b>Area A: Basic Subjects (9 Units)</b>		
A1	Oral Communication	3
A2	Written Communication	3
A3	Critical Thinking	3
<b>Area B: Physical Universe and Its Life Forms (3 Units)</b>		
B1	Physical Science <sup>2</sup>	0
B2	Life Forms <sup>2</sup>	0
B3	Lab (Note: Lab experience to be taken with one of the following: B1, B2 or B5) <sup>2</sup>	0
B4	Math Concepts <sup>2</sup>	0
B5	Additional Course (Any B to reach 12 units) - Take upper-division course to complete Area & upper division requirements.	3
<b>Area C: Arts and Humanities (12 Units)</b>		
C1	Arts	3
C2	Humanities	3
C1/C2	Area C Course	3
C1/C2	Area C Course - Take upper-division course to complete Area & upper division requirements.	3
<b>Area D: The Individual and Society (9 Units)</b>		
Area D Course		3
Area D Course		3
Area D Course	- Take upper-division course to complete Area & upper division requirements.	3
<b>Area E: Understanding Personal Development (3 Units)</b>		
Area E Course		3
<b>Area F: Ethnic Studies (3 Units)</b>		
Area F Course		3
<b>Total Units</b>		<b>39</b>

- <sup>1</sup> To help you complete your degree in a timely manner and not take more units than absolutely necessary, there are ways to use single courses to meet more than one requirement (overlap). For further information, please visit the General Education page (<http://catalog.csus.edu/colleges/academic-affairs/general-education/>).  
**Note:** There is no way to list all possible overlaps so please consult with a professional advisor. The Academic Advising Center can be visited online (<http://www.csus.edu/acad/>), by phone (916) 278-1000, or email ([advising@csus.edu](mailto:advising@csus.edu)).
- <sup>2</sup> Required in Major; also satisfies GE.

## Graduation Requirements <sup>1</sup>

Code	Title	Units
<b>Graduation Requirements (required by CSU) (9 Units)</b>		
	American Institutions: U.S. History	3
	American Institutions: U.S. Constitution & CA Government	3
	Writing Intensive (WI)	3
<b>Graduation Requirements (required by Sacramento State) (12 Units)</b>		
	English Composition II	3
	Race and Ethnicity in American Society (RE)	3
	Foreign Language Proficiency Requirement <sup>2</sup>	6

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- <sup>2</sup> If not satisfied before entering Sacramento State, it may be satisfied in General Education Area C2 (Humanities). "C- or better required." The alternative methods for satisfying the Foreign Language Proficiency Requirement are described here: <https://www.csus.edu/college/arts-letters/world-languages-literatures/foreign-language-requirement.html> (<https://www.csus.edu/college/arts-letters/world-languages-literatures/foreign-language-requirement.html>)