BIOLOGY, BACHELOR OF ARTS

Requirements

Total Course Requirements for the Bachelor's Degree

See the "Requirements for the Bachelor's Degree (https://catalog.csudh.edu/general-information/baccalaureate-degrees-undergraduate-studies/)" in the University Catalog for complete details on general degree requirements. A minimum of 40 units, including those required for the major, must be upper division.

Elective Requirements

Completion of elective courses (beyond the requirements listed below) to reach a total of a minimum of 120 units.

General Education Requirements (49 units)

See the "General Education (https://catalog.csudh.edu/general-education/)" requirements in the University Catalog or the Class Schedule for the most current information on General Education requirements and course offerings.

Graduation Writing Assessment Requirement

See the "Graduation Writing Assessment Requirement (https://catalog.csudh.edu/general-information/baccalaureate-degrees-undergraduate-studies/gwar-certifying-courses/)" in the University Catalog.

Minor Requirements

Single-field major. No minor is required, though it is recommended.

Major Requirements (64-67 units)

All courses applied to the B.A. in Biology must be passed with a grade of "C" or better.

Code	Title	Hours
Lower Division Requirements		
BIO 120	Principles of Biology I	3
BIO 121	Principles of Biology Lab I	1
BIO 122	Principles of Biology II	3
BIO 123	Principles of Biology II Lab	1
BIO 124	Principles of Biology III	3
BIO 125	Principles of Biology Lab III	1
BIO 220	Molecular Biology	3
BIO 221	Molecular Biology Laboratory	1
CHE 110	General Chemistry I	5
CHE 112	General Chemistry II	5
MAT 131	Elementary Statistics and Probability	3
PHY 120	Elements Of Physics I	4
PHY 122	Elements Of Physics II	4
Upper Division Requirements		
BIO 320	Cell Biology	3
BIO 340	Genetics	3
BIO 342	Cell And Genetics Lab	1
BIO 490	Senior Project [1]	3
CHE 316 & CHE 317	Survey of Organic Chemistry and Survey of Organic Chemistry Laboratory	4
Select one of the following:		4
BIO 310 & BIO 311	Plant Physiology and Plant Physiology Laboratory	
BIO 312 & BIO 313	Animal Physiology and Animal Physiology Laboratory	
BIO 314 & BIO 315	Developmental Biology and Developmental Biology Lab	
BIO 326 & BIO 327	General Microbiology and General Microbiology Laboratory	
Select a minimum of 9 additional units of upper division Biology or Chemistry elective courses		9
BIO XXX		
CHE 450	Biochemistry I	
Total Hours		**64**

[1] BIO 490 Senior Project: Major students may substitute this course for General Education Area E. Please contact the University Advisement Center to request the course substitution.

Program Learning Outcomes

Upon successful completion of the B.A. and B.S. Programs in Biology, a degree recipient will be able to:

1. describe the detail the major unifying themes of biology, such as evolution, energy flow and transformation, homeostasis, genetic information storage and utilization, structure-function relationships, and hierarchies of organization;
2. apply scientific reasoning to generate and test hypotheses by designing and executing experiments using appropriate methods in the laboratory or in the field;
3. analyze and interpret quantitative biological data;
4. communicate scientific information in a variety of written and oral formats;
5. discuss the relevance of scientific research to society from a historic and a modern perspective, including the ethical implications of scientific research and of new technology; and
6. find, read, understand, critically evaluate, summarize, and use scientific information.

4-Year Degree Roadmap

Course	Title	Hours
First Year		
Fall		
GE Area A1 Oral Communication		3
GE Area A3 Logic/Critical Thinking		3
GE Area C1 Arts Course		3
GE Area D1 Perspectives on Indiividuals, Groups, and Society		3
MAT 131	Elementary Statistics and Probability (satisfies GE Area B4)	3
	Hours	**15**
Spring		
GE Area A2 Written Communication		3
GE Area C2 Letters Course		3
GE Area D2 Global and Historical Perspectives		3
CHE 108	Introduction to College Chemistry	5
	Hours	**14**
Second Year		
Fall		
Additional Lower Division GE in Area C1 or C2		3

HIS 101	History Of United States	3
BIO 120	Principles of Biology I (may meet GE Area B2 for BIO majors)	3
BIO 121	Principles of Biology Lab I (may meet GE Area B3 for BIO majors)	1
CHE 110	General Chemistry I (may meet GE Areas B1 and B3 for BIO majors)	5
	Hours	**15**
Spring		
GE Area F Ethnic Studies		3
POL 101	American Institutions	3
BIO 122	Principles of Biology II	3
BIO 123	Principles of Biology II Lab	1
CHE 112	General Chemistry II	5
	Hours	**15**
Third Year		
Fall		
BIO 124	Principles of Biology III	3
BIO 125	Principles of Biology Lab III	1
BIO 220	Molecular Biology	3
BIO 221	Molecular Biology Laboratory	1
CHE 316	Survey of Organic Chemistry	3
CHE 317	Survey of Organic Chemistry Laboratory	1
Elective to meet 120 units		3
	Hours	**15**
Spring		
GE Area D3 Integrative Studies in the Social Sciences		3
BIO 320	Cell Biology	3
BIO 340	Genetics (satisfies GE Area B5)	3
BIO 342	Cell And Genetics Lab	1
Major Elective		4
Elective to meet 120 units		3
	Hours	**17**
Fourth Year		
Fall		
GE Area C3 Integrative Studies in the Humanities		3
BIO UD Requirement lecture		3
BIO UD Requirement Lab		1
Major Elective		4
PHY 120	Elements Of Physics I (may meet GE Area B1 and B3 for BIO majors)	4
	Hours	**15**
Spring		
BIO 490	Senior Project (satisfies GWAR requirement; May also satisfy GE Area E, see major advisor)	3
Major Elective		4
Elective to meet 120 units		3
PHY 122	Elements Of Physics II	4
	Hours	**14**
	Total Hours	**120**

2-Year Roadmap (transfer students)

Course	Title	Hours
First Year		
Fall		
GE Area C3 Integrative Studies in the Humanities		3
BIO 124	Principles of Biology III	3
BIO 125	Principles of Biology Lab III	1
BIO 220	Molecular Biology	3
BIO 221	Molecular Biology Laboratory	1
CHE 316	Survey of Organic Chemistry	3
CHE 317	Survey of Organic Chemistry Laboratory	1
	Hours	**15**
Spring		
GE Area D3 Integrative Studies in the Social Sciences		3
BIO 320	Cell Biology	3
BIO 340	Genetics (satisfies GE Area B5)	3
BIO 342	Cell And Genetics Lab	1
Major Elective		4
	Hours	**14**
Second Year		
Fall		
BIO UD Requirement Lecture		3
BIO UD Requirement Lab		1
Major Elective		4
Elective to meet 120 units		3
PHY 120	Elements Of Physics I	4
	Hours	**15**
Spring		
BIO 490	Senior Project (satisfies GWAR requirement; May also satisfy GE Area E if needed, see major advisor)	3
PHY 122	Elements Of Physics II	4
Major Elective		3
Elective to meet 120 units		3
Elective to meet 120 units		3
	Hours	**16**
	Total Hours	**60**