B.S. IN BIOLOGY

Overview

The B.S. degree is recommended as preparation for medical school, veterinary school, dental school, masters and Ph.D. programs in biology, careers in biological research, conservation and environmental management, and teaching at the high school and college level. Three options are available for students to specialize within Biology.

Curriculum Requirements

Code	Title	Credit Hours
Biology Core Courses		**22**
Two semesters of introductory biology plus labs are required, usually taken in the first year:		
BIL 150	General Biology	
BIL 151	General Biology Laboratory	
or BIL 153	Introductory Biology/Chemistry Laboratory I	
BIL 160	Evolution and Biodiversity	
BIL 161	Evolution and Biodiversity Laboratory	
or BIL 163	Introductory Biology/Chemistry Laboratory II	
Select one of the following three Options for upper level required biology core courses:		
Option One: This option is recommended for students interested in medical school, other health sciences, cell, molecular and developmental biology.		
BIL 250	Genetics	
BIL 255	Cellular and Molecular Biology	
BIL 360	Comparative Physiology	
BIL 330	Ecology	
or BIL 320	Evolutionary Biology	
Option Two: This option is recommended for students interested in ecology, evolution, biodiversity and conservation.		
BIL 250	Genetics	
BIL 320	Evolutionary Biology	
BIL 330	Ecology	
BIL 255	Cellular and Molecular Biology	
or BIL 360	Comparative Physiology	
Option Three:		
BIL 250	Genetics	
BIL 255	Cellular and Molecular Biology	
BIL 330	Ecology	
BIL 360	Comparative Physiology	
Additional BIL electives		**12**
At least three credit hours of additional BIL electives must be at the 400-level or higher		
At least one BIL elective must be a CAPSTONE course. (Locate capstone courses in Class Search under "Additional Search Criteria", subheading "Class Attributes".)		
Two biology laboratory or field courses beyond <BIL 151 or BIL 153> and <BIL 161 or BIL 163> are required as part of the additional BIL electives. Approved laboratory/field courses at the 300 level or higher in departments other than Biology (e.g., BMB, MIC, MSC, NEU) can be counted towards this lab requirement. Check with the Department of Biology to confirm that a specific course is allowed to fulfill this requirement.		
Up to eight credit hours toward the major may be selected from courses with a biological topic and numbered 300 or higher in MBE, MES, MSC, or OCE.		
A maximum of two credit hours of the following may be applied towards the major		
BIL 371	Readings in Biology	
BIL 372	Readings in Biology	
A maximum of six credit hours of the following may be applied towards the major. (Only one of these may be counted towards the lab/field course requirement.)		
BIL 495	Projects in Biology	
BIL 496	Projects in Biology	

BIL 497	Projects in Biology	
A maximum of three total credit hours from the following courses may be applied towards the major. Any course in this list may be taken only once to count towards the major. However, these courses may be taken additional times for general elective credit only.		
BIL 281	Undergraduate Learning Internship in Biology	
BIL 381	Workshop Leaders in Biology I [1]	
BIL 382	Workshop Leaders in Biology II	
BIL 481	Undergraduate Teaching Assistant Training in Biology	
BIL 482	PRISM Teaching Fellow	
Chemistry		
Three semesters (16 credits) of chemistry are required for the biology major.		16
CHM 121 & CHM 113	Principles of Chemistry and Chemistry Laboratory I	
CHM 221 & CHM 205	Introduction to Structure and Dynamics and Chemical Dynamics Laboratory	
CHM 222 & CHM 206	Organic Reactions and Synthesis and Organic Reactions and Synthesis Laboratory	
Statistics or Computer Language/Programming		
Select one statistics or one computer language/programming course from the following: [2]		3
BIL 511	Advanced Biostatistics	
ECS 204	Environmental Statistics	
IEN 311	Applied Probability and Statistics	
MSC 204	Environmental Statistics	
MTH 224	Introduction to Probability and Statistics	
PSY 291	Introduction to Biobehavioral Statistics	
PSY 292	Introduction to Biobehavioral Statistics for Non-Majors	
CSC 120	Computer Programming I	
Physics		
Select one of the following Options:		10-11
Option One:		
PHY 101 & PHY 106	College Physics I and College Physics Laboratory I	
PHY 102 & PHY 108	College Physics II and College Physics Laboratory II	
Option Two:		
PHY 201 & PHY 106	University Physics I for the Sciences and College Physics Laboratory I	
PHY 202 & PHY 108	University Physics II for the Sciences and College Physics Laboratory II	
Option Three:		
PHY 211 & PHY 106	University Physics I for PRISM and College Physics Laboratory I	5
PHY 212 & PHY 108	University Physics II for PRISM and College Physics Laboratory II	5
Option Four:		
PHY 221	University Physics I	3
PHY 222 & PHY 224	University Physics II and University Physics II Lab	4
PHY 223 & PHY 225	University Physics III and University Physics III Lab	4
Minor in a Natural Science		**1-16**
A minor in chemistry, ecosystem science and policy, physics, geological sciences, marine sciences, biochemistry and molecular biology, computer science, mathematics, or microbiology and immunology		
Total credit hours for the minor will vary by department.		

The CHM requirement for the BS in biology fulfills either 12 or 15 (depending on which option is selected) of the 16 credits necessary for the minor in Chemistry. To complete the minor in Chemistry, only 1-4 additional credits in CHM are required beyond those necessary for the BS in Biology.		
Additional Required Courses		
ENG 105	English Composition I	3
ENG 106	English Composition II	3
or ENG 107	English Composition II: Science and Technology	
MTH 161	Calculus I	4
MTH 162	Calculus II	4
Language Courses		3-9
Arts and Humanities Cognate		9
People and Society Cognate		9
Electives		25-0
Total Credit Hours		**145-142**

1 A maximum of one credit hour may be applied towards the major or minor. These courses may be taken more than once each for *general elective credit only*, but only two credits from these options may count towards the major or minor.

2 This will fulfill the mathematics/statistics/computer programming requirement under the College of Arts and Sciences General degree requirements for the Bachelor of Science.

Suggested Plan of Study

Year One		
Fall		**Credit Hours**
BIL 150	General Biology	4
BIL 151 or 153	General Biology Laboratory or Introductory Biology/Chemistry Laboratory I	1
CHM 121	Principles of Chemistry	4
CHM 113	Chemistry Laboratory I	1
ENG 105	English Composition I	3
MTH 161	Calculus I	4
	Credit Hours	**17**
Spring		
BIL 160	Evolution and Biodiversity	4
BIL 161 or 163	Evolution and Biodiversity Laboratory or Introductory Biology/Chemistry Laboratory II	1
CHM 221	Introduction to Structure and Dynamics	4
CHM 205	Chemical Dynamics Laboratory	1
ENG 106 or 107	English Composition II or English Composition II: Science and Technology	3
MTH 162	Calculus II	4
	Credit Hours	**17**
Year Two		
Fall		
BIL 250 or 255	Genetics or Cellular and Molecular Biology	3
CHM 222	Organic Reactions and Synthesis	4
CHM 206	Organic Reactions and Synthesis Laboratory	2
Language 101		3
Statistics or Computer Science Course		3
Arts and Humanities Cognate Course		3
	Credit Hours	**18**
Spring		
BIL 250 or 255	Genetics or Cellular and Molecular Biology	3

BIL 330 or 320	Ecology or Evolutionary Biology	3
BIL 374, 375, or 402	Seminar in Biology or Seminar in Biology or Seminar in Biology	1
BIL Lab (note: Some BIL labs are available for WRI credit. Check course listings for more information.)		1-2
Language 102		3
People and Society Cognate course		3
Elective		3
	Credit Hours	**17-18**
Year Three		
Fall		
BIL 250, 255, or 360	Genetics or Cellular and Molecular Biology or Comparative Physiology	3
BIL 330 or 320	Ecology or Evolutionary Biology	3
PHY 101, 201, or 211	College Physics I or University Physics I for the Sciences or University Physics I for PRISM	4
PHY 106	College Physics Laboratory I	1
People and Society Cognate course (WRI)		3
Language 2XX		3
	Credit Hours	**17**
Spring		
Biology Lab/Field course		1-3
PHY 102, 202, or 212	College Physics II or University Physics II for the Sciences or University Physics II for PRISM	4
PHY 108	College Physics Laboratory II	1
Arts and Humanities Cognate (WRI)		3
Elective		6
	Credit Hours	**15-17**
Year Four		
Fall		
BIL Elective		3
Biology Lab/Field course		1-3
BIL Elective		3
Arts and Humanities Cognate		3
Elective (WRI)		3
BIL 375, 374, or 402	Seminar in Biology or Seminar in Biology or Seminar in Biology	1
	Credit Hours	**14-16**
Spring		
BIL Elective		3
BIL Elective		1
Elective (WRI)		3
People and Society Cognate		3
Elective		1-3
Elective		3
	Credit Hours	**14-16**
	Total Credit Hours	**129-136**

Student Learning Outcomes

- Students will, through a required core of courses including laboratories, demonstrate a broad knowledge base in Biology.
- Students will, through exposure to biological concepts, inquiry-based learning and biological research, develop the ability to think critically and to formulate and test hypotheses.
- Students will, through courses intensive in research presentations, develop presentation skills sufficient to communicate scientific information to professional and public audiences.
- Students will, through exposure to biological concepts, inquiry-based learning and biological research, develop the ability to think critically and understand proper application of the scientific method.