

# BS in Biology (282022) MAP Sheet

Life Sciences, Biology

For students entering the degree program during the 2019-2020 curricular year.



University Core and Graduation Requirements				Suggested Sequence of Courses			
<b>University Core Requirements:</b>				<b>FRESHMAN YEAR</b>			
<b>Requirements</b>	<b>#Classes</b>	<b>Hours</b>	<b>Classes</b>	<b>1st Semester</b>		<b>JUNIOR YEAR</b>	
<b>Religion Cornerstones</b>				First-year Writing or American Heritage		5th Semester	
Teachings and Doctrine of The Book of Mormon	1	2.0	REL A 275	BIO 130	3.0	BIO 350	3.0
Jesus Christ and the Everlasting Gospel	1	2.0	REL A 250	CHEM 105	4.0	PWS 340	3.0
Foundations of the Restoration	1	2.0	REL C 225	Quantitative Reasoning	3.0	Biology elective	3.0
The Eternal Family	1	2.0	REL C 200	Religion Cornerstone course	2.0	Arts or Letters elective	3.0
<b>The Individual and Society</b>				<b>Total Hours</b>		<b>Total Hours</b>	
American Heritage	1-2	3-6.0	from approved list	16.0		14.0	
Global and Cultural Awareness	1	3.0	from approved list	<b>2nd Semester</b>		<b>6th Semester</b>	
<b>Skills</b>				CHEM 106, 107		Biology elective	
First Year Writing	1	3.0	from approved list	MATH 112	4.0	Biology elective	4.0
Advanced Written and Oral Communications	1	3.0	from approved list	A HTG or First-Year Writing	3.0	Adv. Written & Oral Communication	3.0
Quantitative Reasoning	1	3-4.0	from approved list	General Elective	3.0	Religion elective	2.0
Languages of Learning (Math or Language)	1	4.0	MATH 112*	Religion Cornerstone course	2.0	General electives	3.0
<b>Arts, Letters, and Sciences</b>				<b>Total Hours</b>		<b>Total Hours</b>	
Civilization 1	1	3.0	from approved list	16.0		15.0	
Civilization 2	1	3.0	from approved list	<b>SOPHOMORE YEAR</b>		<b>SENIOR YEAR</b>	
Arts	1	3.0	from approved list	<b>3rd Semester</b>		<b>7th Semester</b>	
Letters	1	3.0	from approved list	BIO 220 or 230	4.0	Biology electives	5.0
Biological Science	1	4.0	BIO 130*	PHSCS 105 & 107	4.0	General electives	4.0
Physical Science	2	7.0	CHEM 105* and PHSCS 105*	MMBIO 240	3.0	Social Science elective	3.0
Social Science	1	3.0	from approved list	Civilization 1 elective	3.0	Religion elective	2.0
<b>Core Enrichment: Electives</b>				<b>Total Hours</b>		<b>Total Hours</b>	
Religion Electives	3-4	6.0	from approved list	16.0		14.0	
Open Electives	Variable	Variable	personal choice	<b>4th Semester</b>		<b>8th Semester</b>	
*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (15 hours overlap)				PHSCS 106 & 108		BIO 420 & 421	
<b>Graduation Requirements:</b>				Biology elective		Biology elective	
Minimum residence hours required		30.0		3.0		3.0	
Minimum hours needed to graduate		120.0		Civilization 2 elective	3.0	Global & Cultural Awareness elective	3.0
				Arts or Letters Elective	3.0	General electives	5.0
				Religion Cornerstone course	2.0	<b>Total Hours</b>	<b>14.0</b>
				<b>Total Hours</b>	<b>15.0</b>		
				Note: This degree program requires a minimum of 120.0 hours for graduation. Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.			

**BS in Biology (282022)**  
**2019-2020 Program Requirements (60 Credit Hours)**

<b>REQUIREMENT 1</b> Complete 5 courses		BIO 465 - Capstone in Bioinformatics	3.0	<b>THE DISCIPLINE:</b>  The biology degree provides students with current, practical knowledge of plants and animals, emphasizing whole organism biology in both ecological and evolutionary contexts. Broad, synthetic training, from molecular to community levels of organization, equips students to address critical issues and contemporary biological problems associated with the long-term preservation of earth's biodiversity. Elective flexibility allows students to emphasize the botanical or zoological fields, or create a combined program of study. Undergraduate research opportunities may include internships, museum collections curation, bioinventory and databasing activities, applied molecular genetics, and field and laboratory research in ecology, conservation biology, and evolutionary biology.
*BIO 130 - Biology	4.0	BIO 470 - History and Philosophy of Biology	3.0	
BIO 350 - Ecology	3.0	BIO 475 - Plant Developmental Biology	3.0	
BIO 420 - Evolutionary Biology	4.0	BIO 494R - Mentored Research	6.0v	
MMBIO 240 - Molecular Biology	3.0	<i>You may take up to 2 credit hours.</i>		
PWS 340 - Genetics	3.0	BIO 510 - Biological Systematics and Curation	3.0	
<b>REQUIREMENT 2</b> Complete 1 course		BIO 511 - Lichenology	3.0	
BIO 220 - Biological Diversity: Animals	4.0	BIO 512 - Angiosperm Phylogeny	3.0	
BIO 230 - Biological Diversity: Plants	4.0	BIO 520 - Symbiosis	3.0	
<b>REQUIREMENT 3</b> Complete 8 courses		BIO 525 - Animal Disease, Biosecurity, and Zoonoses	3.0	
CHEM 105 - General College Chemistry 1 with Lab (Integrated)	4.0	BIO 530 - Advanced Genetic Analysis	3.0	
CHEM 106 - General College Chemistry 2	3.0	BIO 541 - Aquatic Entomology	4.0	
CHEM 107 - General College Chemistry Laboratory	1.0	BIO 556 - Limnology	3.0	
*MATH 112 - Calculus 1	4.0	BIO 557 - Stream and Wetland Ecology	4.0	
PHSCS 105 - General Physics 1	3.0	BIO 560 - Population Genetics	4.0	
PHSCS 106 - General Physics 2	3.0	CHEM 285 - Introductory Bio-organic Chemistry	4.0	
PHSCS 107 - General Physics Lab 1	1.0	CHEM 351 - Organic Chemistry 1	3.0	
PHSCS 108 - General Physics Lab 2	1.0	CHEM 352 - Organic Chemistry 2	3.0	
<b>REQUIREMENT 4</b> Complete 19.0 hours from the following course(s)		CHEM 353 - Organic Chemistry Laboratory--Nonmajors	2.0v	
<b>NOTE: BIO 220 AND BIO 230, IF TAKEN FOR REQUIREMENT 2, DO NOT DOUBLE COUNT HERE. NOTE: EITHER BIO 370 OR PHIL 212R CAN BE USED TO PARTIALLY FULFILL THIS REQUIREMENT, BUT NOT BOTH.</b>		CHEM 481 - Biochemistry	3.0	
BIO 194 - Introduction to Mentored Research	0.5	MMBIO 461 - Advanced Bacterial Physiology	3.0	
BIO 220 - Biological Diversity: Animals	4.0	MMBIO 465 - Virology	3.0	
BIO 230 - Biological Diversity: Plants	4.0	PDBIO 220 - Human Anatomy (with lab)	4.0	
BIO 316 - Advanced Scientific Writing and Communication	3.0	PDBIO 305 - Human Physiology	4.0	
BIO 370 - Bioethics	2.0	PDBIO 360 - Cell Biology	3.0	
BIO 380 - Comparative Animal Physiology and Anatomy	4.0	PDBIO 362 - Advanced Physiology	3.0	
BIO 399R - Academic Internship	6.0v	PDBIO 363 - Advanced Physiology Laboratory	1.0	
<i>You may take up to 2 credit hours.</i>		PHIL 212R - (Not currently offered)		
BIO 430 - Plant Classification and Identification	4.0	PWS 440 - Plant Physiology	3.0	
BIO 441 - Entomology	3.0	PWS 446 - Ornithology	3.0	
BIO 443 - Ichthyology	3.0	STAT 201 - Statistics for Engineers and Scientists	3.0	
BIO 445 - Herpetology	4.0	<b>REQUIREMENT 5</b>		
BIO 447 - Mammalogy	3.0	Complete an exit interview.		
BIO 450 - Capstone in Biodiversity and Conservation	3.0	<b>See catalog for recommended courses for career options in Botany, Preveterinary Medicine, and/or Premedical and Predental.</b>		
BIO 452 - Marine Biology	4.0			
BIO 455 - Plant Ecology	3.0			
BIO 463 - Genetics of Human Disease	3.0			
				<b>RESEARCH OPPORTUNITIES:</b>  One objective of this program is to provide solid preparation for post graduate studies. For that reason students should take advantage of research opportunities. Department faculty conduct field and laboratory research on diverse topics (including genetics of human diseases, conservation biology, molecular systematics, evolution of life history strategies, biogeographical ecology, bioinventories, aquatic ecology, and bioassessment).  Undergraduates have studied black bears in Utah, mouse systematics in Mexico, stonefly and trout biogeography in the western U.S. , turtles in Amazonia, insects in Borneo, and fish predation in the Provo River. The mentoring option allows up to 2 hours of Bio 494R research credit.
				<b>PROFESSIONAL TRAINING, INTERNSHIPS, CO-OP ED, ETC.</b>  Undergraduates can seek paid positions in research laboratories. Cooperative programs with the U.S. Forest Service and the U. S. Fish and Wildlife Service may be available, as is summer employment with state and federal agencies. This can lead to permanent employment. Completing Bio 430, PWS 330 and 355 can increase summer employment options with government agencies.
				<b>CAREERS:</b>  Post-graduate study in a wide-variety of sub disciplines in biology (molecular biology, genetics, ecology, evolutionary biology, conservation biology, etc.), as well as preparation for medical or dental school. Students may also pursue employment as a biologist in state and federal agencies, nongovernment organizations, and research laboratories.

## **BS in Biology (282022)**

**2019-2020**

### **FINANCING:**

Students in this major may apply for university, college, and departmental scholarships. A number of research or teaching assistant positions for undergraduate students also exist.

### **MAP DISCLAIMER**

While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

### **DEPARTMENT INFORMATION**

#### **Department of Biology**

Brigham Young University  
4101 Life Sciences Building  
Provo, UT 84602  
Telephone: (801) 422-2582

### **ADVISEMENT CENTER INFORMATION**

#### **Life Sciences Advisement**

Brigham Young University  
2060 Life Sciences Building  
Provo, UT 84602  
Telephone: (801) 422-3042