BS in BIOLOGY (282022) MAP Sheet

Department of Biology

For students entering the degree program during the 2016–2017 curricular year.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS

UNIVERSITY CORE REQUIREMENTS

Requirements	#Classes	Hours	Classes
Religion Cornerstones			
Teachings & Doctrine, Book of Mormon	1	2.0	Rel A 275
Jesus Christ & the Everlasting Gospel	1	2.0	Rel A 250
Foundations of the Restoration	1	2.0	Rel C 225
The Eternal Family	1	2.0	Rel C 200
The Individual and Society			
Citizenship			
American Heritage	1–2	3–6.0	from approved list
Global & Cultural Awareness	1	3.0	from approved list
Skills			
Effective Communication			
First-Year Writing	1	3.0	from approved list
Adv Written & Oral Communication	1	3.0	from approved list
Quantitative Reasoning	0–1	0–3.0	from approved list
Languages of Learning (Math or Language)	1	4.0	Math 112*
Arts, Letters, and Sciences			
Civilization 1 and 2	2	6.0	from approved list
Arts	1	3.0	from approved list
Letters	1	3.0	from approved list
Scientific Principles & Reasoning			
Biological Science	1	4.0	Bio 130*
Physical Science	2	7.0	Chem 105* and Phscs 105*
Social Science	1	3.0	from approved list
Core Enrichment: Electives			
Religion Electives	3–4	6.0	from approved list
Open Electives	Variable	Variable	personal choice

GRADUATION REQUIREMENTS:

Minimum residence hours required	30.0
Minimum hours needed to graduate	120.0

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (15 hours overlap)

PROGRAM REQUIREMENTS (60 total hours*)

Complete the following:

Bio	130*	Biology	4.0
Bio	350	Ecology	3.0
Bio	420	Evolutionary Biology	2.0
Bio	421	Evolutionary Biology Lab	1.0
MMBio	240	Molecular Biology	3.0
PWS	340	Genetics	3.0

Complete one course from the following:

Bio	220	Biological Diversity: Animals	4.0
Bio	230	Biological Diversity: Plants	4.0

Complete the following:

Chem	105*	General College Chemistry	4.0
Chem	106	General College Chemistry	3.0
Chem	107	General College Chem Lab	1.0
Math	112*	Calculus 1	4.0
Phscs	105*	General Physics 1	3.0
Phscs	106	General Physics 2	3.0
Phscs	107	General Physics Lab 1	1.0
Phscs	108	General Physics Lab 2	1.0

Complete 20 hours of electives from the following:

Bio	220	Biological Diversity: Animals	4.0
Bio	230	Biological Diversity: Plants	4.0
Bio	370	Bioethics	2.0
Bio	380	Comparative Animal Physiology & Anat	4.0
Bio	430	Plant Classification & Identification	4.0
Bio	441	Entomology	3.0
Bio	442	Advanced Invertebrate Zoology	5.0
Bio	443	Ichthyology	3.0
Bio	445	Herpetology	4.0
Bio	446	Ornithology	3.0
Bio	447	Mammalogy	3.0
Bio	450	Conservation Biology	3.0
Bio	452	Marine Biology	4.0
Bio	455	Plant Ecology	3.0
Bio	463	Genetics of Human Disease	3.0
Bio	465	Bioinformatics	3.0
Bio	470	History & Phil of Biology	3.0
Bio	475	Plant Developmental Biology	3.0
Bio	494R	Mentored Research (Up to 2.0 hours allowed)	6.0V
Bio	510	Biological Systematics & Curation	3.0
Bio	511	Lichenology	3.0
Bio	512	Angiosperm Phylogeny	3.0
Bio	525	Animal Disease, Biosecurity, & Zoonoses	3.0
Bio	541	Aquatic Entomology	4.0
Bio	556	Limnology	3.0
Bio	557	Stream & Wetland Ecology	4.0
Bio	560	Population Genetics	4.0
Chem	285	Intro Bio-organic Chemistry	4.0
Chem	351	Organic Chemistry	3.0
Chem	352	Organic Chemistry	3.0
Chem	353	Organic Chemistry Lab--Nonmajors	2.0V
Chem	481	Biochemistry	3.0
MMBio	461	Adv Bacterial Physiology	3.0
MMBio	465	Virology	3.0
PDBio	220	Human Anatomy (with lab)	3.0
PDBio	305	Human Physiology (with lab)	4.0
PDBio	360	Cell Biology	3.0
PDBio	362	Advanced Physiology	3.0
PDBio	363	Adv Physiology Laboratory	1.0
PWS	440	Plant Physiology	3.0
Stat	201	Statistics for Engineers & Scientists	3.0

Note: Bio 220 and Bio 230, if taken for requirement 2, do not double count here.

Complete an exit interview.

Recommended Courses for Career Options

Botany

Students seeking career and graduate school opportunities in botanical fields should build their electives on a foundation of basic plant biology courses. Coupled with the broad integrative biology core, the following courses provide students with the greatest diversity of options for postgraduate work or training in plant biology:

Bio 430, 455, 475, 510, 511, 512.
PWS 282, 283, 355, 440, 515.

Students completing Bio 430, PWS 330 and 355 often find summer employment opportunities with government land agencies.

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BS in BIOLOGY (282022)

2016–2017

Preveterinary Medicine
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Students interested in applying to veterinary medicine schools should take the following courses as part of the biology major:

Required:
Bio 220, 291R, 380, 392R.
Chem 351, 352, 353 (1 hr req.), 481.
MMBio 221, 222.
Psych 111.
PWS 335.
Stat 201.
StDev 150.

Recommended:
Bio 270, 445, 447, 525.
MMBio 261, 407, 417.
PDBio 325, 360, 484.

Premedical and Predental
Students interested in applying to medical or dental schools should take the following courses as part of the biology major:
Chem 351, 352, 353 (2 hours suggested), 481.
PDBio 220, 305.

Suggested Sequence of Courses:

FRESHMAN YEAR

1st Semester

Bio 130 (FW) (Biological Science)	4.0
Chem 105 (FWSp)	4.0
First-Year Writing	3.0
or A Htg 100 (FWSpSu)	(3.0)
Quantitative Reasoning (if needed)	0–3.0
Religion Cornerstone course	2.0
Total Hours	**13–16.0**

2nd Semester

Chem 106, 107 (FWSpSu)	4.0
Math 112	4.0
A Htg 100 (FWSpSu)	3.0
or First-Year Writing	(3.0)
General Elective	3.0
Religion Cornerstone course	2.0
Total Hours	**16.0**

SOPHOMORE YEAR

3rd Semester

Bio 220 or 230 (FW)	4.0
Phscs 105 & 107 (FWSp) (Physical Science)	4.0
MMBio 240 (FWSp)	3.0
Civilization 1 elective	3.0
Religion Cornerstone course	2.0
Total Hours	**16.0**

4th Semester

Phscs 106 & 108	4.0
Biology elective	3.0
Civilization 2 elective	3.0
Arts or Letters elective (FWSpSu)	3.0
Religion Cornerstone course	2.0
Total Hours	**15.0**

JUNIOR YEAR

5th Semester

Bio 350 (FW)	3.0
PWS 340 (FW)	3.0
Biology elective	3.0
Arts or Letters elective	3.0
Religion elective	2.0
Total Hours	**14.0**

6th Semester

Biology elective	4.0
Biology elective	3.0
Adv. Written & Oral Communication	3.0
Religion elective	2.0
General elective	3.0
Total Hours	**15.0**

SENIOR YEAR

7th Semester

Biology elective	5.0
General elective	4.0
Social Science elective	3.0
Religion elective	2.0
Total Hours	**14.0**

8th Semester

Bio 420 & 421	3.0
Biology elective	3.0
Global & Cultural Awareness elective	3.0
General electives	4.0
Total Hours	**13.0**

THE DISCIPLINE:
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 data-basing activities, applied molecular genetics, and field and laboratory research in ecology, conservation biology, and evolutionary biology.

RESEARCH OPPORTUNITIES:
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.

PROFESSIONAL TRAINING, INTERNSHIPS, CO-OP EDUCATION, AND PRACTICAL EXPERIENCE:
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.

CAREERS:
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, non-government organizations, and research laboratories.

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.

N**ote:** 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.

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