

# BIOLOGY (BS)

## Exploration and Discovery

The BS in Biology prepares students for graduate or professional schools including medical, dental, and veterinary schools, and broadly prepares students in cellular, physiological, organismal, ecological and evolutionary biology. Note that some professional/graduate schools require a full year of physics and that students should work closely with their academic advisor to plan their coursework.

## Degree Requirements

Course	Title	Credits
<b>Major Requirements</b>		
BI 1110	Biological Science I (TECO)	4
BI 1120	Biological Science II	4
BI 2270	Integrative Biology (WECO)	4
BI 3060	Genetics	4
BI 3130	Evolution	4
BI 3240	Conservation (DICO,GACO) (Remove INCO,INCP)	3
BI 4980	Biology Seminar	2
CH 1050	Laboratory Safety	1
CH 2335	General Chemistry I (QRCO)	4
CH 2340	General Chemistry II	4
CH 3370	Organic Chemistry I	4
CH 3380	Organic Chemistry II	4
<b>Lower Level Organismal Electives</b>		
Complete two courses from the following:		8
BI 2030	Invertebrate Zoology	
BI 2040	Vertebrate Zoology	
BI 2070	Botany	
BI 2110 & BI 2130	Human Anatomy and Physiology I and Human Anatomy and Physiology Laboratory I	
BI 2120 & BI 2140	Human Anatomy and Physiology II and Human Anatomy and Physiology Laboratory II	
<b>Upper Level Biology Electives</b>		
Complete 15-16 credits of 3000/4000 level Biology courses not including required courses (BI 3060, BI 3130, BI 3240, and BI 4970/4980). One must be a Writing in the Discipline Connection (WRCO).		15-16
<b>Physics</b>		
PH 2110 or PH 2510	College Physics I or University Physics I	4
<b>Mathematics Foundations</b>		
MA 1800	College Algebra (or equivalent Math Placement Score) <sup>1</sup>	0-3
MA 2130 or MA 2300	Precalculus (QRCO) or Statistics I (QRCO)	3-4
General Education ( <a href="https://coursecatalog.plymouth.edu/general-education/">https://coursecatalog.plymouth.edu/general-education/</a> )		
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4

CTDI ( <a href="https://coursecatalog.plymouth.edu/general-education/#CTDI">https://coursecatalog.plymouth.edu/general-education/#CTDI</a> )	Creative Thought Direction	3-4
PPDI ( <a href="https://coursecatalog.plymouth.edu/general-education/#PPDI">https://coursecatalog.plymouth.edu/general-education/#PPDI</a> )	Past and Present Direction	3-4
SSDI ( <a href="https://coursecatalog.plymouth.edu/general-education/#SSDI">https://coursecatalog.plymouth.edu/general-education/#SSDI</a> )	Self and Society Direction	3-4
Directions (choose from CTDI, PPDI, SIDI, SSDI) ( <a href="https://coursecatalog.plymouth.edu/general-education/">https://coursecatalog.plymouth.edu/general-education/</a> ) <sup>1</sup>		4-7
IS 4220	Signature Project (INCO,INCP)	4
Electives		15-20
<b>Total Credits</b>		<b>120</b>

<sup>1</sup> Math Placement Score can substitute such that only Precalculus or Statistics is required.

<sup>2</sup> Directions must total a minimum of 16 credits.

## Recommended Course Sequence

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

To complete the bachelor's degree in 4 years, you must successfully complete a minimum of 15 credits each semester or have a plan to make up credits over the course of the 4 years. For example, if you take 14 credits one semester, you need to take 16 credits in another semester. Credits completed must count toward your program requirements (major, option, minor, certificate, general education or free electives).

Course	Title	Credits
<b>Year One</b>		
BI 1110	Biological Science I (TECO)	4
BI 1120	Biological Science II	4
CH 1050	Laboratory Safety	1
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
Mathematics Foundations Course:		
MA 1800	College Algebra <sup>1</sup>	0-3
MA 2130 or MA 2300	Precalculus (QRCO) or Statistics I (QRCO)	3-4
Directions (choose from CTDI, PPDI, SSDI) ( <a href="https://coursecatalog.plymouth.edu/general-education/">https://coursecatalog.plymouth.edu/general-education/</a> ) <sup>2</sup>		3-4
Elective		4
<b>Credits</b>		<b>27-32</b>

<b>Year Two</b>		
BI 2270	Integrative Biology (WECO)	4
CH 2335	General Chemistry I (QRCO)	4
CH 2340	General Chemistry II	4
Complete two Lower Level Elective Courses from the following:		8
BI 2030	Invertebrate Zoology	

BI 2040	Vertebrate Zoology	
BI 2070	Botany	
BI 2110 & BI 2130	Human Anatomy and Physiology I and Human Anatomy and Physiology Laboratory I	
BI 2120 & BI 2140	Human Anatomy and Physiology II and Human Anatomy and Physiology Laboratory II	
Directions (choose from CTDI, PPD, SSDI) ( <a href="https://coursecatalog.plymouth.edu/general-education/">https:// coursecatalog.plymouth.edu/general-education/</a> ) <sup>2</sup>		6-8
Electives		3-4
<b>Credits</b>		<b>29-32</b>
<b>Year Three</b>		
BI 3060	Genetics	4
BI 3240	Conservation (DICO, GACO)	3
CH 3370	Organic Chemistry I	4
CH 3380	Organic Chemistry II	4
BI	3000/4000 level Biology courses <sup>3</sup>	3-4
Physics Requirement:		4
PH 2110 or PH 2510	College Physics I or University Physics I	
Directions (choose from CTDI, PPD, SSDI) ( <a href="https://coursecatalog.plymouth.edu/general-education/">https:// coursecatalog.plymouth.edu/general-education/</a> ) <sup>2</sup>		3-4
Electives		5-6
<b>Credits</b>		<b>30-33</b>
<b>Year Four</b>		
BI 3130	Evolution	4
BI 4980	Biology Seminar	2
BI 3000/4000 level Biology electives <sup>3</sup>		4
BI 3000/4000 level Biology WRCO		4
BI 3000/4000 level Biology elective <sup>3</sup>		4
INCP ( <a href="https://coursecatalog.plymouth.edu/general-education/#INCP">https:// coursecatalog.plymouth.edu/ general-education/ #INCP</a> )	Integrated Capstone	4
Directions (choose from CTDI, PPD, SSDI) ( <a href="https://coursecatalog.plymouth.edu/general-education/">https:// coursecatalog.plymouth.edu/general-education/</a> ) <sup>2</sup>		0-4
Electives		2-8
<b>Credits</b>		<b>24-34</b>
<b>Total Credits</b>		<b>120</b>

<sup>1</sup> Math Placement Score can substitute such that only Precalculus or Statistics is required.

<sup>2</sup> Required to take one each of CTDI, SSDI, and PPD and then fulfill 16 credits total of Directions courses. SIDI courses are waived and do not count toward Directions course total for Biology majors.

<sup>3</sup> Excluding Genetics, Conservation, Evolution, and Biology Seminar which are required courses.

## Learning Outcomes

Our BS programs require more background in chemistry and physics in support of this outcome, while our BA program allows for greater breadth.

- An understanding of the scientific method as the means to increase understanding of the natural world through hypothesis-testing.

- An aptitude for critically reading scientific literature, including primary research journals.
- Proficiency in writing, especially in scientific format.
- An ability to present scientific information orally with emphasis on clear interpretation of scientific data.
- Proficiency in techniques specific to a subdiscipline of biology, including but not limited to laboratory, field, and statistical techniques.
- An understanding of the critical issues facing the environment at local, regional, national, and global scales.
- Biological literacy allowing for the evaluation of new information and emerging issues.
- Readiness for post-graduate experiences in graduate school, professional school, or biology employment

## Career Pathways

Biologists study living organisms and their relationships to the environment from molecules, to cells, to ecosystems. Most specialize in a particular discipline within biology, sometimes by pursuing a specialized degree like Environmental Biology or Cell and Molecular Biology. Some go on to attain further education in graduate school or a health professional school for medicine, public health, or pharmacy. There are as many job opportunities as areas of study.

For more information, visit Career Services in the Global Education Office.

Sample Job Titles include: Biochemist, Botanist, Ecologist, Fishery Biologist, High School Science Teacher, Marine Biologist, Microbiologist, Zoologist, Veterinarian, Medical doctor, Physician Assistant, Nurse Practitioner, Doctor of Osteopathic Medicine, Research Scientist, Wildlife Biologist, Pharmacist, Dentist, Medical scientist, Virologist

See the U.S. Department of Labor Outlook for a complete list.

Useful Skills for Jobs in the Biology Fields

- Research skills such as data collection, laboratory techniques, and working in teams
- Ability to problem-solve and think critically
- Written and verbal communication skills to convey technical and scientific data to both scientific and non-scientific communities