

BIOLOGICAL SCIENCES

Office: F.W. Olin Hall, Room 102
 Mail Code: 2190 E. Iliff Ave. Denver, CO 80208
 Phone: 303-871-3661
 Fax: 303-871-3471
 Email: biology@du.edu (Biology@du.edu)
 Web Site: <http://biology.du.edu>

The Department of Biological Sciences offers four distinct life sciences majors provided by a nationally recognized faculty that excels in teaching and research. Many faculty members have received University wide recognition for outstanding teaching. Research programs are funded by grants from agencies such as the National Institutes of Health and the National Science Foundation.

The department has three excellent teaching and research facilities. F.W. Olin Hall is a state-of-the-art facility for lectures and laboratories. Faculty offices and research labs are located across the science quad from Olin Hall in the Seeley G. Mudd building, which has teaching laboratories for advanced technique courses in molecular biology, cell biology and microbiology. Field-oriented courses are offered at the Mount Evans Field Station.

The up-to-date and highly integrated curriculum provides a sound foundation in molecular, cellular, developmental, organismal, ecological and environmental biology. The curriculum prepares students for futures in medicine, dentistry, veterinary medicine, graduate programs in the life sciences, graduate programs in health-related fields like physical therapy or physician assistant programs, ecology, environmental science, conservation biology and science education at the secondary school level.

Programs of Study in Biological Sciences

The department offers majors in the following areas: biological sciences, molecular biology, ecology and biodiversity, and integrated sciences.

Biological Sciences

The biological sciences major provides a curriculum that encompasses the spectrum of disciplines in the life sciences.

Bachelor of Arts Major Requirements

(183 credits required for the degree (<http://bulletin.du.edu/undergraduate/undergraduateprograms/traditionalbachelorsprogram/bachelorofarts>))

45 credits of biology. Requirements include:

Code	Title	Credits
BIOL 1010 & BIOL 1020	Physiological Systems and Physiological Systems Lab	5
BIOL 1011 & BIOL 1021	Evolution, Heredity and Biodiversity and Evolution, Heredity and Biodiversity Lab	5
BIOL 2120 & BIOL 2121	Cell Structure and Function and Cell Structure & Function Lab	5
BIOL 2510 & BIOL 2511	General Genetics and General Genetics Lab	5
BIOL 2010 & BIOL 2011	General Ecology and General Ecology Lab	5
Additional Biology electives at the 2000 or 3000 level ¹		20
Total Credits		45

Additional Requirements

Code **Title** **Credits**

The BA requires either one year of Chemistry or a minor in Chemistry. In addition, eight credits of Mathematics are required.

Chemistry

Chemistry coursework requirements include: 12-20

CHEM 1010 & CHEM 1240	General Chemistry I and General Chemistry I Laboratory	
CHEM 1020 & CHEM 1250	General Chemistry II and General Chemistry II Laboratory	
CHEM 2000 or 3000 level course (at least 4 credits)		

Mathematics

Select one of the following combinations:		8
MATH 1951 & MATH 1952	Calculus I and Calculus II	
or		
MATH 1951 & BIOL 2090	Calculus I and Biostatistics	
or		
MATH 1951 & PSYC 2300	Calculus I and Introduction to Statistics	
or		
or		
Total Credits		20-28

¹ Only five credits of BIOL 3950 Undergraduate Research and/or BIOL 3991 Independent Study may be counted toward the credit requirement for the major.

Bachelor of Science Major Requirements

(183 credits required for the degree (<http://bulletin.du.edu/undergraduate/undergraduateprograms/traditionalbachelorsprogram/bachelorofscience>))

45 credits of biology. Requirements include:

Code	Title	Credits
BIOL 1010 & BIOL 1020	Physiological Systems and Physiological Systems Lab	5
BIOL 1011 & BIOL 1021	Evolution, Heredity and Biodiversity and Evolution, Heredity and Biodiversity Lab	5
BIOL 2120 & BIOL 2121	Cell Structure and Function and Cell Structure & Function Lab	5
BIOL 2510 & BIOL 2511	General Genetics and General Genetics Lab	5
BIOL 2010 & BIOL 2011	General Ecology and General Ecology Lab	5
Additional Biology electives at the 2000 or 3000 level ¹		20
Total Credits		45

Additional Requirements

Code	Title	Credits
Two minors are required for the BS, one of which must be Chemistry. In addition, one year of Physics and one year of Mathematics are required.		

Chemistry

A chemistry minor is required. 20

Physics

One year of Physics with lab. Select one of the following: 15

PHYS 1111 & PHYS 1112 & PHYS 1113	General Physics I and General Physics II and General Physics III	
or		
PHYS 1211 & PHYS 1212 & PHYS 1213	University Physics I and University Physics II and University Physics III	

Mathematics

One year of Calculus. Select one of the following:		12
MATH 1951 & MATH 1952 & MATH 1953	Calculus I and Calculus II and Calculus III	

or		
MATH 1951 & MATH 1952 & BIOL 2090	Calculus I and Calculus II and Biostatistics	
or		
MATH 1951 & MATH 1952 & PSYC 2300	Calculus I and Calculus II and Introduction to Statistics	
Total Credits		47

¹ Only six credits of BIOL 3950 Undergraduate Research and/or BIOL 3991 Independent Study may be counted toward the 45-credit requirement for the major.

Requirements for the Cognitive Neuroscience Concentration: Biological Sciences Majors

45 credits of biology. Required coursework includes those listed for the BA or BS major program in biological sciences. In addition, students must complete:

Code	Title	Credits
BA or BS Biological Sciences major required coursework		25
BIOL 3646	Seminar: Cognitive Neuroscience	2
Any three of the following:		12
BIOL 3160	Biophysics: Ion Channels & Disease	
BIOL 3640	Introductory Neurobiology	
BIOL 3641	Systems Neuroscience	
BIOL 3642	Neuropharmacology	
BIOL 3644	Neuromuscular Pathophysiology	
BIOL 3650	Endocrinology	
Additional Biology electives at the 2000 or 3000 level ¹		6
Total Credits		45

Additional Requirements: Bachelor of Arts

Code	Title	Credits
The Psychology minor is required for the BA. In addition, one year of Chemistry and eight credits of Mathematics are required.		
Psychology minor for Cognitive Neuroscience students		20
See Psychology department for requirements.		
Chemistry		
Chemistry coursework requirements include:		12-20
CHEM 1010 & CHEM 1240	General Chemistry I and General Chemistry I Laboratory	
CHEM 1020 & CHEM 1250	General Chemistry II and General Chemistry II Laboratory	
CHEM 2000 or 3000 level course (at least 4 credits)		
Mathematics		
Select one of the following combinations:		8
MATH 1951 & MATH 1952	Calculus I and Calculus II	
or		
MATH 1951 & BIOL 2090	Calculus I and Biostatistics	
or		
MATH 1951 & PSYC 2300	Calculus I and Introduction to Statistics	
or		

or

Total Credits	40-48
---------------	-------

Additional Requirements: Bachelor of Science

Code	Title	Credits
Two minors are required for the BS, one of which must be Chemistry with the second minor in Psychology. In addition, one year of Physics and one year of Mathematics are required.		
Psychology minor for Cognitive Neuroscience students		20
See Psychology department for requirements		
Chemistry		
A chemistry minor is required.		20
Physics		
One year of Physics with lab. Select one of the following:		15
PHYS 1111 & PHYS 1112 & PHYS 1113	General Physics I and General Physics II and General Physics III	
or		
PHYS 1211 & PHYS 1212 & PHYS 1213	University Physics I and University Physics II and University Physics III	
Mathematics		
One year of Calculus. Select one of the following:		12
MATH 1951 & MATH 1952 & MATH 1953	Calculus I and Calculus II and Calculus III	
or		
MATH 1951 & MATH 1952 & BIOL 2090	Calculus I and Calculus II and Biostatistics	
or		
MATH 1951 & MATH 1952 & PSYC 2300	Calculus I and Calculus II and Introduction to Statistics	
Total Credits		67

¹ Only six credits of BIOL 3950 Undergraduate Research and/or BIOL 3991 Independent Study may be counted toward the credit requirement for the major.

Minor Requirements

20 credits of biology. Requirements include:

Code	Title	Credits
BIOL 1010 & BIOL 1020	Physiological Systems and Physiological Systems Lab	5
BIOL 1011 & BIOL 1021	Evolution, Heredity and Biodiversity and Evolution, Heredity and Biodiversity Lab	5
10 credits of courses at the 2000 level including one from the following courses:		10
BIOL 2120 & BIOL 2121	Cell Structure and Function and Cell Structure & Function Lab	
BIOL 2510 & BIOL 2511	General Genetics and General Genetics Lab	
BIOL 2010 & BIOL 2011	General Ecology and General Ecology Lab	
BIOL 3250	Human Physiology	
Total Credits		20

Cognitive Neuroscience

Cognitive Neuroscience Concentration: Biological Sciences Minor (with Psychology Major)

The minor requirements listed apply only to students completing a Psychology major with a Cognitive Neuroscience concentration. Please see the Department of Psychology (<http://bulletin.du.edu/undergraduate/majorsminorscoursedescriptions/traditionalbachelorsprogrammajorandminors/psychology>) for Psychology minor requirements associated with this concentration.

Minimum of 20 credits as follows:

Code	Title	Credits
BIOL 1010 & BIOL 1020	Physiological Systems and Physiological Systems Lab	5
BIOL 1011 & BIOL 1021	Evolution, Heredity and Biodiversity and Evolution, Heredity and Biodiversity Lab	5
BIOL 2120 & BIOL 2121	Cell Structure and Function and Cell Structure & Function Lab	5
At least two of the following courses:		8
BIOL 3160	Biophysics: Ion Channels & Disease	
BIOL 3640	Introductory Neurobiology	
BIOL 3641	Systems Neuroscience	
BIOL 3642	Neuropharmacology	
BIOL 3644	Neuromuscular Pathophysiology	
BIOL 3650	Endocrinology	
BIOL 3646	Seminar: Cognitive Neuroscience	2
Total Credits		25

Molecular Biology Major

The Molecular Biology major features upper-division courses that share the common theme of gene expression in biological systems and cellular function. This major is intended for students interested in professional postgraduate programs (medicine, dentistry, veterinary medicine), graduate programs in the life sciences and careers in the biotech industry. Students interested in biotech careers are encouraged to consider completing a master of business administration (MBA). See the chair of Biological Sciences (Olin Hall, room 102) for details concerning this dual degree program.

Bachelor of Arts Major Requirements

(183 credits required for the degree (<http://bulletin.du.edu/undergraduate/undergraduateprograms/traditionalbachelorsprogram/bachelorofarts>))

44 credits of biology. Requirements include:

Code	Title	Credits
BIOL 1010 & BIOL 1020	Physiological Systems and Physiological Systems Lab	5
BIOL 1011 & BIOL 1021	Evolution, Heredity and Biodiversity and Evolution, Heredity and Biodiversity Lab	5
BIOL 2120 & BIOL 2121	Cell Structure and Function and Cell Structure & Function Lab	5
BIOL 2510 & BIOL 2511	General Genetics and General Genetics Lab	5
BIOL 3800	Human Molecular Biology	4
Any 3000-level BIOL course in addition to the lab and category requirements below ¹		4
Molecular Biology lab/research requirement		
BIOL 3560	Molecular Biology Laboratory	4
Category Elective Courses (minimum of three courses)		12
BIOL 3120	General Microbiology	
BIOL 3130	Molecular Evolution	
BIOL 3150	Intracellular Dynamics	

BIOL 3160	Biophysics: Ion Channels & Disease
BIOL 3570	Proteins in Biological Systems
BIOL 3610	Developmental Biology
BIOL 3630	Cell Biology of Development
BIOL 3640	Introductory Neurobiology
BIOL 3642	Neuropharmacology
BIOL 3644	Neuromuscular Pathophysiology
BIOL 3650	Endocrinology
BIOL 3670	Molecular Immunology
BIOL 3704	Advanced Topics in Cell Biology
BIOL 3705	Advanced Topics in Molecular Biology
BIOL 3910	Viruses & Infectious Human Diseases

Total Credits 44

Additional Requirements

Code	Title	Credits
------	-------	---------

The BA requires a minor in Chemistry. In addition, eight credits of Mathematics are required.

Chemistry

Chemistry minor course work requirements include: 20

CHEM 1010 & CHEM 1240	General Chemistry I and General Chemistry I Laboratory
CHEM 2451 & CHEM 2461	Organic Chemistry I and Organic Chemistry Lab I
CHEM 2452 & CHEM 2462	Organic Chemistry II and Organic Chemistry Lab II

At least eight additional hours of 2000-level or higher course work

Mathematics

Select one of the following combinations: 8

or

or

MATH 1951 & PSYC 2300	Calculus I and Introduction to Statistics
--------------------------	--

or

MATH 1951 & BIOL 2090	Calculus I and Biostatistics
--------------------------	---------------------------------

Total Credits 28

¹ Only five credits of BIOL 3950 Undergraduate Research and/or BIOL 3991 Independent Study may be counted toward the credit requirement for the major.

Bachelor of Science Major Requirements

(183 credits required for the degree (<http://bulletin.du.edu/undergraduate/undergraduateprograms/traditionalbachelorsprogram/bachelorofscience>))

50 credits of biology. Requirements include:

Code	Title	Credits
BIOL 1010 & BIOL 1020	Physiological Systems and Physiological Systems Lab	5
BIOL 1011 & BIOL 1021	Evolution, Heredity and Biodiversity and Evolution, Heredity and Biodiversity Lab	5
BIOL 2120 & BIOL 2121	Cell Structure and Function and Cell Structure & Function Lab	5
BIOL 2510 & BIOL 2511	General Genetics and General Genetics Lab	5
BIOL 3800	Human Molecular Biology	4

Any 3000-level BIOL course in addition to the lab and category requirements below ¹	4
BIOL 3560 Molecular Biology Laboratory	4
Category Elective Courses (minimum of three courses)	12
BIOL 3120 General Microbiology	
BIOL 3130 Molecular Evolution	
BIOL 3150 Intracellular Dynamics	
BIOL 3160 Biophysics: Ion Channels & Disease	
BIOL 3570 Proteins in Biological Systems	
BIOL 3610 Developmental Biology	
BIOL 3630 Cell Biology of Development	
BIOL 3640 Introductory Neurobiology	
BIOL 3642 Neuropharmacology	
BIOL 3644 Neuromuscular Pathophysiology	
BIOL 3650 Endocrinology	
BIOL 3670 Molecular Immunology	
BIOL 3704 Advanced Topics in Cell Biology	
BIOL 3705 Advanced Topics in Molecular Biology	
BIOL 3910 Viruses & Infectious Human Diseases	
Additional Biology electives at the 2000 or 3000 level ¹	6
Total Credits	50

Additional Requirements

Code	Title	Credits
The BS requires two minors—one of which must be Chemistry. In addition, one year of Mathematics and one year of Physics are required		
Chemistry		
A chemistry minor is required.		20
Physics		
One year of Physics with lab. Select one of the following combinations:		15
PHYS 1111 & PHYS 1112 & PHYS 1113	General Physics I and General Physics II and General Physics III	
or		
PHYS 1211 & PHYS 1212 & PHYS 1213	University Physics I and University Physics II and University Physics III	
Mathematics		
Select one of the following combinations:		12
MATH 1951 & MATH 1952 & MATH 1953	Calculus I and Calculus II and Calculus III	
or		
MATH 1951 & MATH 1952 & BIOL 2090	Calculus I and Calculus II and Biostatistics	
or		
MATH 1951 & MATH 1952 & PSYC 2300	Calculus I and Calculus II and Introduction to Statistics	
Total Credits		47

¹ Only six credits of BIOL 3950 Undergraduate Research and/or BIOL 3991 Independent Study may be counted toward the credit requirement for the major.

Cognitive Neuroscience Concentration: Molecular Biology Major

44 credits of biology (BA); 50 credits of biology (BS). Required coursework includes those listed for the BA or BS major program in molecular biology. In addition, students must complete:

Code	Title	Credits
BA or BS Molecular Biology major required coursework		28
BIOL 3646	Seminar: Cognitive Neuroscience	2
Any three of the following:		12
BIOL 3160	Biophysics: Ion Channels & Disease	
BIOL 3640	Introductory Neurobiology	
BIOL 3641	Systems Neuroscience	
BIOL 3642	Neuropharmacology	
BIOL 3644	Neuromuscular Pathophysiology	
BIOL 3650	Endocrinology	
Additional Biology electives at the 2000 or 3000 level ¹		2-8
Total Credits		44-50

Additional Requirements for the Bachelor of Arts Degree

Code	Title	Credits
The BA requires a minor in Chemistry as well as the Cognitive Neuroscience Psychology minor. In addition, eight credits of Mathematics are required.		
Cognitive Neuroscience Psychology minor		20
Refer to Psychology for requirements		
Chemistry		
A chemistry minor is required.		20
Mathematics		
Select one of the following combinations:		8
MATH 1951 & PSYC 2300	Calculus I and Introduction to Statistics	
or		
MATH 1951 & BIOL 2090	Calculus I and Biostatistics	
Total Credits		48

Additional Requirements for the Bachelor of Science Degree

Code	Title	Credits
The BS requires two minors—one of which must be Chemistry. The other minor is Cognitive Neuroscience Psychology minor. In addition, one year of Mathematics and one year of Physics are required		
Cognitive Neuroscience Psychology minor		20
Refer to Psychology for requirements		
Chemistry		
A chemistry minor is required.		20
Physics		
One year of Physics with lab. Select one of the following combinations:		15
PHYS 1111 & PHYS 1112 & PHYS 1113	General Physics I and General Physics II and General Physics III	
or		
PHYS 1211 & PHYS 1212 & PHYS 1213	University Physics I and University Physics II and University Physics III	
Mathematics		
Select one of the following combinations		12

MATH 1951 & MATH 1952 & MATH 1953	Calculus I and Calculus II and Calculus III	
or		
MATH 1951 & MATH 1952 & BIOL 2090	Calculus I and Calculus II and Biostatistics	
or		
MATH 1951 & MATH 1952 & PSYC 2300	Calculus I and Calculus II and Introduction to Statistics	
Total Credits		67

¹ Only six credits of BIOL 3950 Undergraduate Research and/or BIOL 3991 Independent Study may be counted toward the credit requirement for the major.

Ecology and Biodiversity Major

The Ecology and Biodiversity major focuses on topics in the life sciences at the organismal and ecosystem levels. It is intended for students interested in graduate programs in ecology, conservation biology, evolution or environmental sciences.

Bachelor of Arts Major Requirements

(183 credits required for the degree (<http://bulletin.du.edu/undergraduate/undergraduateprograms/traditionalbachelorsprogram/bachelorofarts>))

44 credits of biology. Requirements include:

Code	Title	Credits
BIOL 1010 & BIOL 1020	Physiological Systems and Physiological Systems Lab	5
BIOL 1011 & BIOL 1021	Evolution, Heredity and Biodiversity and Evolution, Heredity and Biodiversity Lab	5
BIOL 2010 & BIOL 2011	General Ecology and General Ecology Lab	5
BIOL 2050 & BIOL 2051	Conservation Biology and Conservation Biology Lab	5
BIOL 2510 & BIOL 2511	General Genetics and General Genetics Lab	5
Field course requirement		
BIOL 3030 or BIOL 3055	Alpine Ecology Ecology of the Rockies	4
Category elective courses ¹		
Select three courses from the following		12
BIOL 3010	Evolution and Speciation	
BIOL 3020	Aquatic Ecology	
BIOL 3030	Alpine Ecology	
BIOL 3035	Invasive Species Ecology	
BIOL 3060	Tropical Ecology	
BIOL 3085	Insect Ecology	
BIOL 3090	Microbial Ecology	
BIOL 3095	Global Change Ecology	
BIOL 3110	Special Topics: Biology	
BIOL 3120	General Microbiology	
BIOL 3130	Molecular Evolution	
BIOL 3200	Invertebrate Evolution	
BIOL 3410	Animal Behavior	
BIOL 3700	Topics in Ecology	

Additional Biology electives at the 2000 or 3000 level ¹	3
Total Credits	44

Additional Requirements

Code	Title	Credits
Chemistry		
CHEM 1010 & CHEM 1240	General Chemistry I and General Chemistry I Laboratory	4
Mathematics		
Select one of the following combinations:		8
MATH 1951 & BIOL 2090	Calculus I and Biostatistics	
or		
MATH 1951 & PSYC 2300	Calculus I and Introduction to Statistics	
Total Credits		12

Bachelor of Science Major Requirements

(183 credits required for the degree (<http://bulletin.du.edu/undergraduate/undergraduateprograms/traditionalbachelorsprogram/bachelorofscience>))

49 credits of biology. Requirements include:

Code	Title	Credits
BIOL 1010 & BIOL 1020	Physiological Systems and Physiological Systems Lab	5
BIOL 1011 & BIOL 1021	Evolution, Heredity and Biodiversity and Evolution, Heredity and Biodiversity Lab	5
BIOL 2010 & BIOL 2011	General Ecology and General Ecology Lab	5
BIOL 2050 & BIOL 2051	Conservation Biology and Conservation Biology Lab	5
BIOL 2510 & BIOL 2511	General Genetics and General Genetics Lab	5
BIOL 2090	Biostatistics	4
Field course requirement		4
BIOL 3030 or BIOL 3055	Alpine Ecology Ecology of the Rockies	
Category elective courses ¹		
Minimum of three courses		12
BIOL 3010	Evolution and Speciation	
BIOL 3020	Aquatic Ecology	
BIOL 3030	Alpine Ecology	
BIOL 3035	Invasive Species Ecology	
BIOL 3060	Tropical Ecology	
BIOL 3085	Insect Ecology	
BIOL 3090	Microbial Ecology	
BIOL 3095	Global Change Ecology	
BIOL 3110	Special Topics: Biology	
BIOL 3120	General Microbiology	
BIOL 3130	Molecular Evolution	
BIOL 3200	Invertebrate Evolution	
BIOL 3410	Animal Behavior	
BIOL 3700	Topics in Ecology	

Additional Biology electives at the 2000 or 3000 level ¹	4
Total Credits	49

Additional Requirements

Code	Title	Credits
In addition, students must complete one year of Chemistry, Physics and Calculus		
Chemistry		
One year with lab		12
CHEM 1010 & CHEM 1240	General Chemistry I and General Chemistry I Laboratory	
CHEM 1020 & CHEM 1250	General Chemistry II and General Chemistry II Laboratory	
CHEM 2240	Introduction to Environmental Chemistry	
Physics		
One year of Physics with lab. Select one of the following combinations:		15
PHYS 1111 & PHYS 1112 & PHYS 1113	General Physics I and General Physics II and General Physics III	
or		
PHYS 1211 & PHYS 1212 & PHYS 1213	University Physics I and University Physics II and University Physics III	
Mathematics		
Choose one of the following combinations:		12
MATH 1951 & MATH 1952 & BIOL 2090	Calculus I and Calculus II and Biostatistics	
or		
MATH 1951 & MATH 1952 & MATH 1953	Calculus I and Calculus II and Calculus III	
Total Credits		39

¹ Only 5 credits of Undergraduate Research (BIOL 3950) and/or Independent Study (BIOL 3991) may be counted toward the credit requirement for the major.

² Only 6 credits of Undergraduate Research (BIOL 3950) and/or Independent Study (BIOL 3991) may be counted toward the 45-credit requirement for the major.

Requirements for Distinction in the Major in Biological Science

- Minimum 3.5 cumulative GPA
- At least three quarters of research (BIOL 3950 Undergraduate Research or BIOL 3991 Independent Study)
- Completion of a thesis

Requirements for Distinction in the Major in Molecular Biology

- Minimum 3.5 cumulative GPA
- At least three quarters of research (BIOL 3950 Undergraduate Research or BIOL 3991 Independent Study)
- Completion of a thesis

Distinction in the Major in Ecology and Biodiversity

- Minimum 3.5 cumulative GPA
- At least three quarters of research (BIOL 3950 Undergraduate Research or BIOL 3991 Independent Study)
- Completion of a thesis

The course plans below are intended to give students an example of how they might complete their degree requirements in the first two years. Please note that plans can vary greatly in year 2, and students should work with their Biology advisor to determine their academic path.

BS in Biological Sciences

First Year

Fall	Credits Winter	Credits Spring	Credits
FSEM 1111	4 WRIT 1122	4 WRIT 1133	4
CHEM 1010	3 CHEM 1020	3 CHEM 2131	3
CHEM 1240	1 CHEM 1250	1 CHEM 2141	1
MATH 1951 or BIOL 2090	4 MATH 1951 or 1952	4 MATH 1952 or 1953	4
Common Curriculum Requirement/Elective ¹	4 BIOL 1011	4 BIOL 1010	4
	BIOL 1021	1 BIOL 1020	1
	16	17	17

Second Year

Fall	Credits Winter	Credits Spring	Credits
BIOL 2120 & BIOL 2121 (or BIOL 2010 & BIOL 2011)	5 BIOL 2510 & BIOL 2511	5 BIOL upper level elective	4
CHEM 2451	3 CHEM 2452	3 CHEM 2453	3
CHEM 2461	1 CHEM 2462	1 CHEM 2463	1
Foreign Language	4 Foreign Language	4 Foreign Language	4
PHYS 1111 (or general elective)	5 PHYS 1112 (or general elective)	5 PHYS 1113 (or general elective)	5
	18	18	17

Total Credits: 103

¹ This "slot" will be needed for biology in Winter and Spring quarters, so do not start another full-year sequence during Fall quarter

BA in Biological Sciences

First Year

Fall	Credits Winter	Credits Spring	Credits
FSEM 1111	4 WRIT 1122	4 WRIT 1133	4
CHEM 1010	3 CHEM 1020	3 CHEM 2131	3
CHEM 1240	1 CHEM 1250	1 CHEM 2141	1
MATH 1951 or BIOL 2090	4 MATH 1951 or 1952	4 MATH 1952 (or general elective)	4
Common Curriculum Requirement/Elective ¹	4 BIOL 1011	4 BIOL 1010	4
	BIOL 1021	1 BIOL 1020	1
	16	17	17

Second Year

Fall	Credits Winter	Credits Spring	Credits
BIOL 2120 & BIOL 2121 (or BIOL 2010 & BIOL 2011)	5 BIOL 2510	4 BIOL Upper Level Elective	4
Foreign Language	4 BIOL 2511	1 Foreign Language	4
Common Curriculum Requirement/Elective	4 Foreign Language	4 Common Curriculum Requirement/Elective	4
Common Curriculum Requirement/Elective	4 Common Curriculum Requirement/Elective	4 Common Curriculum Requirement/Elective	4
	Common Curriculum Requirement/Elective	4	
	17	17	16

Total Credits: 100

¹ This "slot" will be needed for biology in Winter and Spring quarters, so do not start another full-year sequence during Fall quarter

BS in Molecular Biology

First Year

Fall	Credits Winter	Credits Spring	Credits
FSEM 1111	4 WRIT 1122	4 WRIT 1133	4
CHEM 1010	3 CHEM 1020	3 CHEM 2131	3
CHEM 1240	1 CHEM 1250	1 CHEM 2141	1
MATH 1951 or BIOL 2090	4 MATH 1951 or 1952	4 MATH 1952 or 1953	4
Common Curriculum Requirement/Elective ¹	4 BIOL 1011	4 BIOL 1010	4

	BIOL 1021	1 BIOL 1020	1
	16	17	17
Second Year			
Fall	Credits Winter	Credits Spring	Credits
BIOL 2120 & BIOL 2121	5 BIOL 2510	4 BIOL 3560	4
CHEM 2451	3 BIOL 2511	1 CHEM 2453	3
CHEM 2461	1 CHEM 2452	3 CHEM 2463	1
Foreign Language	4 CHEM 2462	1 Foreign Language	4
PHYS 1111 (or general elective)	5 Foreign Language	4 PHYS 1113 (or general elective)	5
	PHYS 1112 (or general elective)	5	
	18	18	17

Total Credits: 103

¹ This "slot" will be needed for biology in Winter and Spring quarters, so do not start another full-year sequence during Fall quarter

BA in Molecular Biology

	Credits Winter	Credits Spring	Credits
First Year			
Fall			
FSEM 1111	4 WRIT 1122	4 WRIT 1133	4
CHEM 1010	3 CHEM 1020	3 CHEM 2131	3
CHEM 1240	1 CHEM 1250	1 CHEM 2141	1
MATH 1951 or BIOL 2090	4 MATH 1951 or 1952	4 MATH 1952 (or general elective)	4
Common Curriculum Requirement/Elective ¹	4 BIOL 1011	4 BIOL 1010	4
	BIOL 1021	1 BIOL 1020	1
	16	17	17
Second Year			
Fall	Credits Winter	Credits Spring	Credits
BIOL 2120 & BIOL 2121	5 BIOL 2510	4 BIOL 3560	4
CHEM 2451	3 BIOL 2511	1 CHEM 2453	3
CHEM 2461	1 CHEM 2452	3 CHEM 2463	1
Foreign Language	4 CHEM 2462	1 Foreign Language	4
Common Curriculum Requirement/Elective	4 Foreign Language	4 BIOL 3800 (or general elective)	4
	Common Curriculum Requirement/Elective	4	
	17	17	16

Total Credits: 100

¹ This "slot" will be needed for biology in Winter and Spring quarters, so do not start another full-year sequence during Fall quarter

BS in Ecology and Biodiversity

	Credits Winter	Credits Spring	Credits
First Year			
Fall			
FSEM 1111	4 WRIT 1122	4 WRIT 1133	4
CHEM 1010	3 CHEM 1020	3 CHEM 2240	4
CHEM 1240	1 CHEM 1250	1 MATH 1952	4
MATH 1951 or BIOL 2090	4 MATH 1951 or 1952	4 BIOL 1010	4
Common Curriculum Requirement/Elective ¹	4 BIOL 1011	4 BIOL 1020	1
	BIOL 1021	1	
	16	17	17
Second Year			
Fall	Credits Winter	Credits Spring	Credits
BIOL 2010 & BIOL 2011	5 BIOL 2510	4 BIOL 2050	4
Foreign Language	4 BIOL 2511	1 BIOL 2051	1
PHYS 1111 (or general elective)	5 Foreign Language	4 Foreign Language	4
Common Curriculum Requirement/Elective	4 PHYS 1112 (or general elective)	5 PHYS 1113 (or general elective)	5

	Common Curriculum Requirement/Elective	4 Common Curriculum Requirement/Elective	4
	18	18	18

Total Credits: 104

¹ This "slot" will be needed for biology in Winter and Spring quarters, so do not start another full-year sequence during Fall quarter

BA in Ecology and Biodiversity

First Year

Fall	Credits Winter	Credits Spring	Credits
FSEM 1111	4 WRIT 1122	4 WRIT 1133	4
CHEM 1010	3 CHEM 1020	3 CHEM 2240	4
CHEM 1240	1 CHEM 1250	1 Common Curriculum Requirement/Elective	4
MATH 1951 or BIOL 2090	4 MATH 1951	4 BIOL 1010	4
Common Curriculum Requirement/Elective ¹	4 BIOL 1011	4 BIOL 1020	1
	BIOL 1021	1	
	16	17	17

Second Year

Fall	Credits Winter	Credits Spring	Credits
BIOL 2010 & BIOL 2011	5 BIOL 2510 & BIOL 2511	5 BIOL 2050 & BIOL 2051	5
Foreign Language	4 Foreign Language	4 Foreign Language	4
Common Curriculum Requirement/Elective	4 Common Curriculum Requirement/Elective	4 Common Curriculum Requirement/Elective	4
Common Curriculum Requirement/Elective	4 Common Curriculum Requirement/Elective	4 Common Curriculum Requirement/Elective	4
	17	17	17

Total Credits: 101

¹ This "slot" will be needed for biology in Winter and Spring quarters, so do not start another full-year sequence during Fall quarter