

Biology, BS

The BS in biology curriculum lays the groundwork for strong scientific training with basic course work in mathematics, chemistry, and physics, relevant to biology. Students explore the organization and processes of life across broad areas of the field, from molecules and cells through organs and organ systems to populations, ecosystems, and evolution. Students can select advanced electives to specialize in a subdiscipline of biology such as developmental biology, stem cell biology, microbiology, or physiology.

Program Requirements

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified and complete any additional courses needed beyond specific college and major requirements to satisfy graduation credit requirements.

Universitywide Requirements

All undergraduate students are required to complete the Universitywide Requirements (<http://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements/>).

NUpath Requirements

All undergraduate students are required to complete the NUpath Requirements (<http://catalog.northeastern.edu/undergraduate/university-academics/nupath/>).

Biology Major Requirements

Code	Title	Hours
Introduction to College		
BIOL 1000 or INSC 1000	Biology at Northeastern Science at Northeastern	1
Experiential Learning Introduction		
EESC 2000	Professional Development for Co-op	1
Required Biology		
<i>Foundations</i>		
BIOL 1107 and BIOL 1108	Foundations of Biology and Lab for BIOL 1107	5
<i>Inquiries</i>		
BIOL 2299	Inquiries in Biological Sciences	4
<i>Genetics</i>		
BIOL 2301 and BIOL 2302	Genetics and Molecular Biology and Lab for BIOL 2301	5
<i>Project Lab</i>		
BIOL 2309	Biology Project Lab	4
<i>Biochemistry</i>		
BIOL 3611 and BIOL 3612	Biochemistry and Lab for BIOL 3611	5

Biology Capstone

Code	Title	Hours
Please complete one of the following options to fulfill the capstone requirement:		
BIOL 4701	Biology Capstone	1-4
BIOL 4971	Junior/Senior Honors Project 2	
BIOL 4900	Biology Research Capstone (concurrent with BIOL 4991 or BIOL 4994)	

Biology Major Electives

Code	Title	Hours
Organismal and Evolutionary Biology		
Complete one of the following:		
BIOL 2327	Human Parasitology	4-5
BIOL 3401	Comparative Vertebrate Anatomy	
BIOL 3403	Animal Behavior	
BIOL 3413	Current Topics in Organismal and Population Biology	

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EEMB 2302 and EEMB 2303	Ecology and Lab for EEMB 2302
EEMB 2400	Introduction to Evolution
EEMB 2700 and EEMB 2701	Marine Biology and Lab for EEMB 2700
EEMB 3460	Conservation Biology
EEMB 3466	Disease Ecology

Intermediate and Advanced Biology

Complete three additional 4- or 5-semester-hour courses from the following: 12-15

BIOL 2321 to BIOL 3999	
BIOL 4705	Neurobiology of Cognitive Decline
BIOL 4707	Cell and Molecular Biology
BIOL 5000 to BIOL 5999	
EEMB 2290 to EEMB 5515	
EEMB 5520 to EEMB 5535	
EEMB 5548 to EEMB 5569	
ENVR 5242	Ancient Marine Life

One of the three intermediate/advanced electives can be a research course:

BIOL 4991	Research
BIOL 4994	Internship
BIOL 4970	Junior/Senior Honors Project 1
BIOL 4971	Junior/Senior Honors Project 2

Supporting Courses

Code	Title	Hours
Mathematics		
MATH 1251	Calculus and Differential Equations for Biology 1	4
Statistics		
ENVR 2500 and ENVR 2501	Biostatistics and Lab for ENVR 2500	5
Chemistry		
<i>General Chemistry</i>		
CHEM 1161 and CHEM 1162 and CHEM 1163	General Chemistry for Science Majors and Lab for CHEM 1161 and Recitation for CHEM 1161	5
<i>Organic Chemistry</i>		
CHEM 2311 and CHEM 2312	Organic Chemistry 1 and Lab for CHEM 2311	5
CHEM 2313 and CHEM 2314	Organic Chemistry 2 and Lab for CHEM 2313	5
Physics		
<i>Physics 1</i>		
Complete one of the following lecture/lab pairs. PHYS 1145/PHYS 1146 is recommended:		5
PHYS 1145 and PHYS 1146	Physics for Life Sciences 1 and Lab for PHYS 1145	
PHYS 1151 and PHYS 1152 and PHYS 1153	Physics for Engineering 1 and Lab for PHYS 1151 and Interactive Learning Seminar for PHYS 1151	
PHYS 1161 and PHYS 1162	Physics 1 and Lab for PHYS 1161	
<i>Physics 2</i>		
Complete one of the following lecture/lab pairs. PHYS 1147/PHYS 1148 is recommended:		5
PHYS 1147 and PHYS 1148	Physics for Life Sciences 2 and Lab for PHYS 1147	

PHYS 1155 and PHYS 1156 and PHYS 1157	Physics for Engineering 2 and Lab for PHYS 1155 and Interactive Learning Seminar for PHYS 1155
PHYS 1165 and PHYS 1166	Physics 2 and Lab for PHYS 1165

Intermediate or Advanced Science

Complete one course from the following: 4

BIOL 2301 to BIOL 5999

CHEM 2311 to CHEM 5999

EEMB 2290 to EEMB 5999

ENVR 2310 to ENVR 5999

MATH 2280 to MATH 5999

PHYS 2303 to PHYS 5999

PSYC 2290 to PSYC 5999

Biology Major Credit/GPA Requirement

Complete 78 semester hours in the major with a cumulative GPA of 2.000.

Due to overlap in course content, double majoring in biology and cell and molecular biology, biology and biochemistry, biology and behavioral neuroscience, or biology and marine biology is not permitted.

Program Requirement

136 total semester hours required

Plan of Study

Please note that these are sample plans of study. While the requirements are the same for all students, individual schedules may vary.

Four Years, Two Co-ops in Summer 2/Fall

Year 1								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
BIOL 1107		4 BIOL 2299		4 BIOL 2301		4 Vacation		
BIOL 1108		1 CHEM 2311		4 BIOL 2302		1		
CHEM 1161		4 CHEM 2312		1 Elective		4		
CHEM 1162		1 ENGW 1111		4				
INSC 1000		1 Elective		4				
MATH 1251		4						
Elective		4						
		19		17		9		0
Year 2								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
CHEM 2313		4 BIOL 2309		4 BIOL 3611		4 Co-op		
CHEM 2314		1 EESC 2000		1 BIOL 3612		1		
ENVR 2500		4 PHYS 1145		4 Elective		4		
ENVR 2501		1 PHYS 1146		1				
Elective		4 Elective		4				
Elective		4 Elective		4				
		18		18		9		0
Year 3								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
Co-op		PHYS 1147		4 Intermediate/Advanced Biology Elective		4 Co-op		
ENGW 3307		4 PHYS 1148		1 (Intermediate/Advanced Biology Elective Lab)		1		
		Organismal/Population Bio Elective		4 Elective		4		

	(Organismal/Population Bio Elective Lab)	1		
	Intermediate/Advanced Biology Elective	4		
	(Intermediate/Advanced Biology Elective Lab)	1		
	Elective	4		
	4	19	9	0

Year 4

Fall	Hours	Spring	Hours		
Co-op		BIOL 4701	4		
		Intermediate/Advanced Biology Elective	4		
		(Intermediate/Advanced Biology Elective Lab)	1		
		Intermediate/Advanced Science Elective	4		
		(Intermediate/Advanced Science Elective Lab)	1		
		Elective	4		
	0		18		

Total Hours: 140

Four Years, Two Co-ops in Spring/Summer 1**Year 1**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
AP Credit for Biology	5	BIOL 2301	4	BIOL 2309	4	Vacation	0
BIOL 1000	1	BIOL 2302	1	Elective	4		
BIOL 2299	4	CHEM 2311	4				
CHEM 1161	4	CHEM 2312	1				
CHEM 1162	1	ENGW 1111	4				
MATH 1251	4	Elective	4				
Elective	4						
	23		18		8		0

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CHEM 2313	4	Co-op		Co-op		PHYS 1147	4
CHEM 2314	1			Elective	4	PHYS 1148	1
EESC 2000	1					Elective	4
ENVR 2500	4						
ENVR 2501	1						
PHYS 1145	4						
PHYS 1146	1						
	16		0		4		9

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
BIOL 3611	4	Co-op		Co-op		Intermediate/Advanced Science Elective	4
BIOL 3612	1					(Intermediate/Advanced Science Elective Lab)	1
ENGW 3307	4					Elective	4
Intermediate/Advanced Biology Elective	4						

(Intermediate/Advanced Biology Elective Lab)	1							
Elective	4							
	18			0			0	9

Year 4								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
Intermediate/Advanced Biology Elective		4 BIOL 4701		4				
(Intermediate/Advanced Biology Elective Lab)		1 Intermediate/Advanced Biology Elective		4				
Organismal/Population Bio Elective		4 (Intermediate/Advanced Biology Elective Lab)		1				
(Organismal/Population Bio Elective Lab)		1 Elective		4				
Elective		4 Elective		4				
Elective		4						
	18		17					

Total Hours: 140

Five Years, Three Co-ops in Summer 2/Fall

Year 1								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
BIOL 1000		1 BIOL 2299		4 BIOL 2301		4 Vacation		0
BIOL 1107		4 CHEM 2311		4 BIOL 2302		1		
BIOL 1108		1 CHEM 2312		1 Elective		4		
CHEM 1161		4 ENGW 1111		4				
CHEM 1162		1 Elective		4				
MATH 1251		4						
Elective		4						
	19		17			9		0

Year 2								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
CHEM 2313		4 BIOL 2309		4 Intermediate/Advanced Biology Elective		4 Co-op		0
CHEM 2314		1 EESC 2000		1 (Intermediate/Advanced Biology Elective Lab)		1		
ENVR 2500		4 PHYS 1145		4 Elective		4		
ENVR 2501		1 PHYS 1146		1				
Elective		4 Elective		4				
Elective		4 Elective		4				
	18		18			9		0

Year 3								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
Co-op		0 BIOL 3611		4 Vacation		Co-op		0
		BIOL 3612		1				
		ENGW 3307		4				
		PHYS 1147		4				
		PHYS 1148		1				
		Elective		4				
	0		18			0		0

Year 4								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
Co-op		0 Intermediate/Advanced Biology Elective		4 Vacation		Co-op		0

	(Intermediate/Advanced Biology Elective Lab)	1					
	Organismal/Population Bio Elective						
	(Organismal/Population Bio Elective Lab)	1					
	Elective	4					
	Elective	4					
		0		14		0	0
Year 5							
Fall	Hours	Spring		Hours			
Co-op	0	BIOL 4701		4			
		Intermediate/Advanced Biology Elective		4			
		(Intermediate/Advanced Biology Elective Lab)		1			
		Intermediate/Advanced Science Elective		4			
		(Intermediate/Advanced Science Elective Lab)		1			
		Elective		4			
		0		18			

Total Hours: 140

Five Years, Three Co-ops in Spring/Summer 1

Year 1									
Fall	Hours	Spring		Hours	Summer 1		Hours	Summer 2	Hours
AP Credit for Biology	5	BIOL 2301		4	BIOL 2309		4	Vacation	
BIOL 1000	1	BIOL 2302		1	Elective		4		
BIOL 2299	4	CHEM 2311		4					
CHEM 1161	4	CHEM 2312		1					
CHEM 1162	1	ENGW 1111		4					
MATH 1251	4	Elective		4					
Elective	4								
	23			18			8		0
Year 2									
Fall	Hours	Spring		Hours	Summer 1		Hours	Summer 2	Hours
CHEM 2313	4	Co-op			Co-op			PHYS 1147	4
CHEM 2314	1							PHYS 1148	1
EESC 2000	1							Elective	4
ENVR 2500	4								
ENVR 2501	1								
PHYS 1145	4								
PHYS 1146	1								
	16			0			0		9
Year 3									
Fall	Hours	Spring		Hours	Summer 1		Hours	Summer 2	Hours
BIOL 3611	4	Co-op			Co-op			Vacation	
BIOL 3612	1								
ENGW 3307	4								
Elective	4								
Elective	4								
	17			0			0		0

Year 4								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
Intermediate/Advanced Biology Elective		4 Co-op		Co-op		Vacation		
(Intermediate/Advanced Biology Elective Lab)		1						
Organismal/Population Bio Elective		4						
(Organismal/Population Bio Elective Lab)		1						
Elective		4						
Elective		4						
		18		0		0		0
Year 5								
Fall	Hours	Spring	Hours					
Intermediate/Advanced Biology Elective		4 BIOL 4701		4				
(Intermediate/Advanced Biology Elective Lab)		1 Intermediate/Advanced Biology Elective		4				
Intermediate/Advanced Science Elective		4 (Intermediate/Advanced Biology Elective Lab)		1				
(Intermediate/Advanced Science Elective Lab)		1 Elective		4				
Elective		4						
Elective		4						
		18		13				

Total Hours: 140