

# Major in Biology

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**ADVISING HELP:** *Questions about the Biology Major?* See Biology Major Requirements (<https://www.neiu.edu/sites/default/files/documents/2021/03/29/Biology%20MAJOR%20course%20requirements.pdf>) and contact BiologyAdvising@neiu.edu (bioadvising@neiu.edu) to ask questions and to make an appointment with an advisor.

## Major in Biology for the Bachelor of Science Degree

Are you fascinated by the world around you? The Biology Department at Northeastern Illinois University can give you the tools to ask and answer pressing questions that interest you. Biology is the study of living organisms (bacteria, protozoans, fungi, algae, plants and animals); our students have the opportunity to learn about these organisms at the molecular, cellular, organismal and ecological levels.

### Why choose the Biology Department at Northeastern Illinois University?

- You will engage directly with faculty in a small classroom or laboratory setting.
- You will practice relevant laboratory techniques, using updated equipment in renovated labs, through our intensive laboratory-based curriculum.
- You can use those lab skills, gained in the classroom, to take on a research project with our faculty in a wide range of specializations.
- You can customize your education to meet your career objectives through our flexible curriculum.

### Accelerated degree tracks

Interested in obtaining a Master's Degree? We offer an Accelerated Biology B.S./M.S. Track for qualified students, that allows undergraduates to begin graduate-level coursework as a junior or senior. Twelve credit hours can be shared between the bachelor's and master's degrees, allowing for faster completion. Our Master of Science in Biology degree provides advanced training for a wide variety of career fields in biological and biomedical sciences, including in molecular biology, genetics, microbiology, ecology, botany, and zoology.

We also offer an Accelerated Teaching Track for students planning a career as a high school teacher. Twelve credit hours can be applied toward both the B.S. in Biology degree and the Master of Arts in Teaching- Secondary Education degree (<https://www.neiu.edu/academics/daniel-l-goodwin-college-of-education/departments/educational-inquiry-curriculum-studies/master-of-arts-teaching-secondary-education/>). This provides a pathway for qualified students to move seamlessly from the B.S. in Biology degree into the M.A.T. in Secondary Education graduate program, and to obtain teacher licensure in a shorter time period.

For more information about the accelerated degree paths offered by the Biology Program, please contact BioGradPrograms@neiu.edu.

### Advising resources

- In addition to being assigned a biology advisor, we offer daily walk-in and virtual advising. Gain advice about recommended elective courses appropriate for your particular career goals. Please email BiologyAdvising@neiu.edu with any questions you may have and to obtain the advising schedule.
- Interested in pursuing professional training in medicine, dentistry, pharmacy, optometry, physical therapy, or other health-related professions? Students can meet with the Director of Pre-Professional Advising, David Nissim-Sabat (d-nissimsabat@neiu.edu) to receive guidance on recommended courses, graduate-school test preparation, and the application process.
- At the Student Center for Science Engagement, you may gain additional advice about careers, internship applications, graduate school planning, and the STEM job search process. Visit them in BBH-235 or contact scse@neiu.edu to make an appointment with their advisors.
- Advising for the Accelerated Biology B.S./M.S. Track that allows faster completion of the Master of Science in Biology degree is coordinated by the Biology Graduate Program Advisor. Please contact BioGradPrograms@neiu.edu for more information.
- For information about earning a license to teach biology at the high-school level, contact Vanessa King, v-king@neiu.edu, in the Goodwin College of Education. Please note that we offer an Accelerated Teaching Track for biology majors, which allows qualified students to share 12 credit hours between the B.S. in Biology degree and M.A. in Teaching in Secondary Education degree, thus providing teaching certification more quickly.

The Department of Biology values the different lived experiences of our students, faculty, and staff. Diversity of thoughts, opinions, and backgrounds enhances learning, teaching, and discovery in the classroom, laboratory, and community. We work to create a sense of inclusivity through collaborative learning environments that allow students to work together to collect, analyze, and interpret data, as well as promote student interactions and discussions centered around those data.

As biologists, we recognize our responsibility as stewards of the natural environment, caretakers of human health, and innovators in the ethical development and equitable distribution of resources and knowledge. We empower students to relate the biological topics they are learning to pressing

societal issues such as health care inequities and the impacts of climate change. By incorporating modern, cutting-edge technologies and research advances into our laboratory classes, we equip students with the tools they need to achieve excellence in their careers.

There are no requirements for admission to the B.S. in Biology Program other than being a student in good standing.

We offer two options for accelerated tracks to provide a faster path toward completing either an M.S. degree in Biology or an M.A. in Teaching in Secondary Education. To apply to an accelerated track, students must have a cumulative grade point average of at least 3.0 and have completed at least 60 credits toward their bachelor's degree; at least 12 of those credits must have been earned at NEIU. In addition, students must complete the application for either the M.S. Biology or M.A. in Teaching in Secondary Education degree and meet all admission requirements for the desired program. Accepted students may then begin graduate-level coursework while still undergraduates, during the junior or senior year. The advantage of the accelerated tracks is that twelve credit hours may be shared between the bachelor's and master's degrees, allowing a faster path toward obtaining a master's degree.

**ADVISING HELP:** Let us help you navigate graduation requirements! We offer both walk-in and virtual meetings with biology advisors. Please email [BiographyAdvising@neiu.edu](mailto:BiographyAdvising@neiu.edu) with any questions you may have and to obtain the advising schedule.

## University Core Curriculum Requirements

General Education Distribution Area	Cr. Hrs.
<b>Fine Arts (FA)*</b> 2 courses, from at least two of the following areas of study: Art, CMT (Mass Media or Theatre), Music (includes Dance).	6
<b>Humanities (HU)*</b> 3 courses, from at least two of the following areas of study: CMT (Communication), English, Linguistics, Philosophy, Women's and Gender Studies, World Languages and Cultures, (Note: No more than two foreign language courses may be used to fulfill this requirement.)	9
<b>Behavioral/Social Sciences (SB)*</b> 3 courses, from at least two of the following areas of study: African & African American Studies, Anthropology, Computer Science, Economics, Geography & Environmental Studies, History, Justice Studies, Latino & Latin American Studies, Political Science, Psychology, Sociology, Social Work	9
<b>Natural Sciences (NS and NSL)**</b> 3 courses, from at least two of the following areas of study; one course must have a laboratory component (NSL): Biology, Chemistry, Earth Science, Environmental Science, Physics (Note: If an FYE ANTH that counts as Natural Science is taken, only one Biology course may be used for Natural Science).	9

### Engaged Learning Experiences

Students must complete, at Northeastern, three courses designated as Engaged Learning Experiences courses. One of the Engaged Learning Experiences courses must be at the 300-level, and one Engaged Learning Experiences course must be designated as "Boundary Crossing".

### Discipline Specific (ELE-DS)

These courses have pre-requisites that are specific courses within a program of study. Discipline Specific courses give students a deeper understanding of how knowledge is created and applied in their field.

### Boundary Crossing (ELE-X)

These are courses that cross disciplinary boundaries and/or cross boundaries through engagements outside the classroom or University allowing students to see how knowledge gained in one field might inform other fields or other aspects of society.

### Math/Quantitative Reasoning (MA)

1 Math course, that has intermediate Algebra as prerequisite OR is a course listed on the General Education Distributive Learning List of Approved Courses. Any 3 hour college level math course, beyond Intermediate Algebra, meets this requirement.

- \* Majors in Fine Arts, Humanities or Social/Behavioral Sciences, may waive up to 6 credit hours of General Education requirements in the corresponding distribution area.
- \*\* Majors in Natural Sciences may waive up to 9 credit hours of General Education requirements in the Natural Sciences distribution area.

Students should also be aware of all other university requirements to obtain a degree - NEIU requirements (<http://catalog.neiu.edu/graduation-requirements/bachelors-degree/>)

## Major in Biology for the bachelor of science degree

To obtain the B.S. in Biology degree, students will choose either the Biology Track, the Accelerated Biology B.S./M.S. Track, or the Accelerated Teaching Track. The Biology Track and the Accelerated Biology B.S./M.S. Track provide broad training in biology and in cognate sciences and prepare students for a wide variety of careers in the biological and biomedical sciences. The Accelerated Teaching Track is for students planning a career as a high school teacher, and provides a faster path toward obtaining teacher licensure.

### Biology Track

The Biology Track requires a set of six core courses, five elective courses, a capstone, and a set of six cognate courses in chemistry, mathematics and physics. A maximum of three electives (and five biology courses total) can be transferred toward the Biology Track. An unlimited number of the required cognate courses can be transferred.

Code	Title	Hours
REQUIRED CORE COURSES:		
BIO-201	General Biology I	4
BIO-202	General Biology II	4
BIO-250	Essential Skills For Biologists	3
BIO-301	Cell Biology	4
BIO-303	General Genetics	4
BIO-305	Writing Intensive Program:General Ecology	4
<b>Total Hours</b>		<b>23</b>

Code	Title	Hours
FIVE ELECTIVE COURSES:		
<b>Biology electives are numbered between BIO 310 - BIO 380. The fifth biology elective may be BIO or a Cognate elective. See a biology advisor or contact <a href="mailto:BiographyAdvising@neiu.edu">BiographyAdvising@neiu.edu</a> for guidance on electives for the Accelerated Biology B.S./M.S. track and for lists of approved Botany, Zoology, and Cognate electives, and substitutes allowed.</b>		
	BIO elective from approved Botany list	
	BIO elective from approved Zoology list	
	BIO elective	
	BIO elective	
	BIO elective or approved Cognate elective	
<b>At least three of the above electives must be 4-credits, with a lab.</b>		<b>18-20</b>

Code	Title	Hours
CAPSTONE REQUIREMENT:		
<b>Select one of the following:</b>		
BIO-390	Biology Senior Seminar	
BIO-391	Internship In Biology	
BIO-392 & BIO-393	Independent Research I and Independent Research II	
BIO-394	Seminar In Teaching Of Biology	
BIO-307 & BIO-308	Interdisciplinary Research Skills I and Interdisciplinary Research Skills II	
ZHON-360 & ZHON-395	Honors Seminar In Research & Creative Processes and Honors Thesis/ Creative Project	

NEIU-301M & NEIU-302M & NEIU-303	Developing A Research Thesis and College Teaching For TA's and Preparing For Graduate Study
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**Students should check with a biology advisor to determine prerequisites for the above options.**

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Code	Title	Hours
<b>REQUIRED COGNATE COURSES:</b>		
CHEM-211	General Chemistry I	5
CHEM-212	General Chemistry II	4
CHEM-231	Organic Chemistry I	4
MATH-187	Calculus I	4
or MATH-275	Applied And Computational Statistics	
PHYS-201L	College Physics I With Lab	5
or PHYS-206L	University Physics I With Lab	
PHYS-202L	College Physics II With Lab	5
or PHYS-207L	University Physics II With Lab	
<b>Total Hours</b>		<b>27</b>

## Accelerated Biology B.S./M.S. Track

Students who desire a faster path toward completing both the Bachelor of Science and Master of Science degrees in Biology should consider the Accelerated Biology B.S./M.S. Track, which allows up to twelve credit hours taken at the 400-level to count toward both the Bachelor's and Master's degrees. The Accelerated Biology B.S./M.S. Track requires a set of six core courses, five elective courses, a capstone, and a set of six cognate courses in chemistry, mathematics and physics. A maximum of three electives (and five biology courses total) can be transferred toward the Accelerated Biology B.S./M.S. Track. An unlimited number of the required cognate courses can be transferred.

Code	Title	Hours
<b>REQUIRED CORE COURSES:</b>		
BIO-201	General Biology I	4
BIO-202	General Biology II	4
BIO-250	Essential Skills For Biologists	3
BIO-301	Cell Biology	4
BIO-303	General Genetics	4
BIO-305	Writing Intensive Program:General Ecology	4
<b>Total Hours</b>		<b>23</b>

Code	Title	Hours
<b>FIVE ELECTIVE COURSES:</b>		
<b>Biology electives are numbered between BIO 310 - BIO 380 and between BIO 410 - BIO 480. The fifth biology elective may be BIO or a Cognate elective. See the graduate program advisor or contact BioGradPrograms@neiu.edu for guidance on electives for the Accelerated Biology B.S./M.S. Track.</b>		
BIO elective from approved Botany list		
BIO elective from approved Zoology list		
BIO elective		
BIO elective		
BIO elective or approved Cognate elective		
<b>At least three of the above electives must be 4-credits, with a lab.</b>		<b>18-20</b>

Code	Title	Hours
<b>CAPSTONE:</b>		
<b>BIO-405 fulfills the capstone requirement. BIO-4822 may be taken by students in the M.S. thesis track option, with approval from the graduate program advisor.</b>		
BIO-405	Biological Literature (required)	
BIO-4822	Independent Investigations (optional)	
<b>Total Hours</b>		<b>3-5</b>

Code	Title	Hours
REQUIRED COGNATE COURSES:		
CHEM-211	General Chemistry I	5
CHEM-212	General Chemistry II	4
CHEM-231	Organic Chemistry I	4
MATH-187	Calculus I	4
or MATH-275	Applied And Computational Statistics	
PHYS-201L	College Physics I With Lab	5
or PHYS-206L	University Physics I With Lab	
PHYS-202L	College Physics II With Lab	5
or PHYS-207L	University Physics II With Lab	
<b>Total Hours</b>		<b>27</b>

Students in the Accelerated Biology B.S./M.S. Track must maintain a 3.0 cumulative undergraduate GPA and earn at least a "B" in all 400-level biology courses. The undergraduate degree must be completed within four semesters of starting the graduate-level courses that will be shared between the B.S. in Biology degree and the M.S. in Biology degree.

## Accelerated Teaching Track

Students planning to become a high school teacher should consider the Accelerated Teaching Track, which includes courses that will count toward both the Bachelor of Science in Biology degree and the Master of Arts in Teaching- Secondary Education degree (<https://www.neiu.edu/academics/daniel-l-goodwin-college-of-education/departments/educational-inquiry-curriculum-studies/master-of-arts-teaching-secondary-education/>). The Accelerated Teaching Track requires a set of six core courses, four elective courses, a set of six cognate courses in chemistry, mathematics, physics, and earth science, and a set of four education courses. A maximum of two electives (and five biology courses total) can be transferred toward the Accelerated Teaching Track. An unlimited number of the required cognate courses can be transferred.

Code	Title	Hours
REQUIRED CORE COURSES:		
BIO-201	General Biology I	4
BIO-202	General Biology II	4
BIO-250	Essential Skills For Biologists	3
BIO-301	Cell Biology	4
BIO-303	General Genetics	4
BIO-305	Writing Intensive Program:General Ecology	4
<b>Total Hours</b>		<b>23</b>

Code	Title	Hours
FOUR ELECTIVE COURSES:		
<b>Biology electives are numbered between BIO 310 - BIO 380. The fourth biology elective may be BIO or Physics II. Please note that Microbiology and Human Anatomy &amp; Physiology are NOT allowed to substitute for Botany or Zoology electives in the Accelerated Teaching Track. See your advisor for more information.</b>		
	BIO elective in Botany (with lab)	4
	BIO elective in Zoology (with lab)	4
	BIO elective (with lab)	4
	BIO elective (with or without lab)	3-5
	or College Physics II (PHYS 202L)	
	or University Physics II (PHYS 207L)	
<b>Total Hours</b>		<b>15-17</b>

Code	Title	Hours
REQUIRED COGNATE COURSES:		
CHEM-211	General Chemistry I	5
CHEM-212	General Chemistry II	4
CHEM-231	Organic Chemistry I	4
MATH-187	Calculus I	4
or MATH-275	Applied And Computational Statistics	

PHYS-201L or PHYS-206L	College Physics I With Lab University Physics I With Lab	5
ESCI-211	Physical Geology	4
<b>Total Hours</b>		<b>26</b>

Code	Title	Hours
<b>REQUIRED EDUCATION COURSES:</b>		
SCED-402S	Methods Of Teaching Science In Secondary Schools	3
SCED-415	Introduction To Secondary School Curriculum	3
EDFN-415	Educational Thought And Secondary Schooling	3
LTCY-502	Disciplinary Literacy Instruction In Secondary Grades	3
<b>Total Hours</b>		<b>12</b>

Students in the Accelerated Teaching Track must maintain a 3.0 cumulative undergraduate GPA and earn at least a "B" in all required education courses. The undergraduate degree must be completed within four semesters of starting the graduate-level courses that will be shared between the B.S. in Biology degree and the M.A. in Teaching in Secondary Education degree.

This sample curricular plan is provided to guide you toward completing coursework for the biology major. This guide should not replace regular consultations with a biology advisor. For other course plan options, or for specific recommendations of courses not identified, please contact [BiographyAdvising@neu.edu](mailto:BiographyAdvising@neu.edu) to make an advising appointment. We also offer courses in the summer, to speed time toward graduation.

**New!** We also offer accelerated degree programs leading from the B.S. in Biology to the M.S. in Biology (<https://catalog.neiu.edu/arts-sciences/biology/master-science-biology/>) or to the M.A. in Teaching in Secondary Education (<https://www.neiu.edu/academics/daniel-l-goodwin-college-of-education/departments/educational-inquiry-curriculum-studies/master-of-arts-teaching-secondary-education/>). Qualified students can start taking graduate-level courses as an undergraduate, allowing them to share up to twelve credits between the bachelor's and master's degrees. The master's degree is thus completed more quickly, and at less expense. Coursework requirements for accelerated tracks differ that that below. Please reach out for more information to [BioGradPrograms@neu.edu](mailto:BioGradPrograms@neu.edu) ([biogradprograms@neu.edu](mailto:biogradprograms@neu.edu)).

#### First Year

Term 1		Hours
BIO-201	General Biology I	4
MATH-173	College Algebra	4
ENGL-101	Writing I	3
General Education Course - FYE		3
<b>Term Hours</b>		<b>14</b>
<b>Term 2</b>		
BIO-202	General Biology II	4
BIO-250	Essential Skills For Biologists	3
MATH-185	Precalculus	4
ENGL-102	Writing II	3
General Education Course		3
<b>Term Hours</b>		<b>17</b>

#### Second Year

Term 1		Hours
BIO-305	Writing Intensive Program: General Ecology	4
CHEM-211	General Chemistry I	5
CHEM-211C	Enrichment Seminar In General Chemistry I	1
MATH-187 (OR)	Calculus I	4
MATH-275	Applied And Computational Statistics	
<b>Term Hours</b>		<b>14</b>
<b>Term 2</b>		
BIO-301	Cell Biology	4
BIO-303	General Genetics	4
CHEM-212	General Chemistry II	4
CHEM-212C	Enrichment Seminar In General Chemistry II	1

General Education Course		3
	<b>Term Hours</b>	<b>16</b>
<b>Third Year</b>		
<b>Term 1</b>		
CHEM-231	Organic Chemistry I	4
BIO Elective		4
BIO Elective		4
General Education Course		3
	<b>Term Hours</b>	<b>15</b>
<b>Term 2</b>		
BIO Elective		4
BIO Elective		3
Engaged Learning Experience- Boundary Crossing (ELE-X), 300-level		3
General Education Course		3
General Education Course		3
	<b>Term Hours</b>	<b>16</b>
<b>Fourth Year</b>		
<b>Term 1</b>		
BIO-390	Biology Senior Seminar	3
PHYS-201L (OR)	College Physics I With Lab	5
PHYS-206L	University Physics I With Lab	
300-level course		3
General Education Course		3
	<b>Term Hours</b>	<b>14</b>
<b>Term 2</b>		
BIO Elective		4
PHYS-202L (OR)	College Physics II With Lab	5
PHYS-207L	University Physics II With Lab	
300-level course		3
General Education Course		3
	<b>Term Hours</b>	<b>15</b>
	<b>Total Hours:</b>	<b>121</b>