

# Biology, PhD

The PhD program entails course work from a core biology curriculum along with advanced courses in the student's area of research interest. This is complemented by intensive research and completion of a dissertation under faculty supervision. Faculty research includes biochemistry, microbiology, cell and molecular biology, genetics, neurobiology, regenerative biology, and the biology of reproduction. Two optional concentrations are available: cell and molecular biology and molecular microbiology.

*Students who have completed required coursework with a cumulative GPA of 3.000 or better may be eligible to receive an (http://catalog.northeastern.edu/archive/2021-2022/graduate/social-sciences-humanities/sociology/sociology-ma/)MS Biology (http://catalog.northeastern.edu/archive/2021-2022/graduate/science/biology/biology-ms/) degree. In addition, students who do not qualify for the doctoral degree, but who have completed required coursework with a cumulative GPA of 3.000 or better, may be eligible to receive a terminal MS Biology (http://catalog.northeastern.edu/archive/2021-2022/graduate/science/biology/biology-ms/) degree. Note that no students will be admitted directly into the MS Biology (http://catalog.northeastern.edu/archive/2021-2022/graduate/science/biology/biology-ms/) to pursue a master's degree.*

## Program Requirements

### Bachelor's Degree Entrance

Complete all courses and requirements listed below unless otherwise indicated.

### Milestones

Qualifying examination  
Annual review  
Dissertation committee  
Dissertation proposal  
Colloquia (minimum of three)  
First-author publication  
Dissertation defense

### Core Requirements

Code	Title	Hours
<b>Research Ethics</b>		
Complete one of the following courses:		4
BIOL 7399	Research Problem Solving, Ethics, and Communication Skills	
BIOL 5599	Principles of Data Management and Peer Review in Biology	
<b>Colloquium</b>		
Complete the following (repeatable) course twice:		2
BIOL 5100	Biology Colloquium	

### BIOLOGY PHD WITHOUT CONCENTRATION

Code	Title	Hours
<b>Required Course Work</b>		
Complete 8 semester hours from the following:		8
BIOL 6303	Neurobiology and Behavior	
BIOL 6399	Dynamics of Microbial Ecology	
BIOL 6401	Research Methods and Critical Analysis in Molecular Cell Biology	

BIOL 6405	Prokaryotic Cell and Molecular Biology	
BIOL 6407	Biochemistry for Molecular Biologists	
<b>Electives</b>		
Complete 16 semester hours from the following:		16
BIOL 5103 to BIOL 9984		

### Concentrations

- Cell and Molecular Biology (p. )
- Molecular Microbiology (p. 1)

### CELL AND MOLECULAR BIOLOGY CONCENTRATION

Code	Title	Hours
<b>Required Course Work</b>		
BIOL 6401	Research Methods and Critical Analysis in Molecular Cell Biology	4
BIOL 6407	Biochemistry for Molecular Biologists	4
<b>Electives</b>		
In consultation with faculty advisor, complete 16 semester hours from the topic of cell and molecular biology:		16
BIOL 5103 to BIOL 9984		

### MOLECULAR MICROBIOLOGY CONCENTRATION

Code	Title	Hours
<b>Required Course Work</b>		
Complete 8 semester hours from the following:		8
BIOL 6399	Dynamics of Microbial Ecology	
BIOL 6405	Prokaryotic Cell and Molecular Biology	
BIOL 6407	Biochemistry for Molecular Biologists	
<b>Electives</b>		
In consultation with faculty advisor, complete 16 semester hours from the topic of molecular microbiology:		16
BIOL 5103 to BIOL 9984		

### Dissertation

Code	Title	Hours
BIOL 9990	Dissertation Term 1	
BIOL 9991	Dissertation Term 2	

### Program Credit/GPA Requirements

30 total semester hours required  
Minimum 3.000 GPA required

### Advanced Entry PhD Program Requirements

The biology PhD program seeks to provide a broad background knowledge base in conjunction with in-depth study of a specialized area of biology. The program emphasizes close interaction between graduate students and faculty members in developing the intellectual and experimental skills required for creative, independent research.

Students entering the PhD program with a related Master of Science degree typically have significantly reduced course loads. An individualized course of study is designed by the biology graduate curriculum committee in consultation with the student and the student's advisor. The student can then focus on intensive research and completion of a dissertation under faculty supervision. Faculty research includes biochemistry, microbiology, cell and molecular biology, genetics,

neurobiology, regenerative biology, and the biology of reproduction.

Financial support (teaching assistantships or research assistantships) is normally provided for PhD students who are making satisfactory progress toward completion of their degree.

Complete all courses and requirements listed below unless otherwise indicated.

### **Milestones**

- Qualifying examination
- Annual review
- Dissertation committee
- Dissertation proposal
- Colloquia (minimum of three)
- First-author publication
- Dissertation defense

### **Core Requirements**

#### **APPROVED COURSE WORK**

Consult your faculty adviser for acceptable courses.

#### **APPROVED ELECTIVES**

Consult your faculty adviser for acceptable electives.

### **Dissertation**

<b>Code</b>	<b>Title</b>	<b>Hours</b>
BIOL 9990	Dissertation Term 1	
BIOL 9991	Dissertation Term 2	

### **Program Credit/GPA Requirements**

Variable total semester hours required

Minimum 3.000 GPA required