

# BIOLOGY, PHD

The Biology Graduate Program represents many areas of biology, and interactions with a diverse group of colleagues provide opportunities to broaden every student's thinking and make connections between different fields and scientific approaches. Areas of research include microbiology, cell biology, development, physiology, neuroscience, animal behavior, plant biology, genetics, computational biology, evolution, ecology and biodiversity.

Each entering graduate student has the freedom to pursue topics ranging from the behavior of molecules to that of cells, organisms, genomes, and ecosystems. We encourage students to get broad exposure through lab rotations with any faculty member in the Biology Graduate Group. As students focus on more specific research interests, they tailor their graduate education accordingly, choosing courses from different departments and schools at Penn as appropriate.

Students complete most of their course work and lab rotations in the first year and then start their thesis research in the second year while completing their teaching requirement and preparing for their candidacy exams. Students are then fully focused on thesis research by the end of the second year. Students still have the option of taking additional courses in advanced years in order to enhance their graduate research.

**For more information:** <http://www.bio.upenn.edu/graduate/>

View the University's Academic Rules for PhD Programs (<http://catalog.upenn.edu/pennbook/academic-rules-phd/>).

## Required Courses

The total course units for graduation in this program is 13.5.

Code	Title	Course Units
<b>Foundation Course</b>		
BIOL 7000	Advanced Topics in Current Biological Research	1
<b>Writing Requirement</b>		
BIOL 6010	Communication for Biologists	1
<b>Core Courses</b>		
Select two of the following:		2
BIOL 4410	Advanced Evolution	
BIOL 4411	Evolutionary Ecology or BIOL 4517 Theoretical Population Biology	
BIOL 5240	Genetic Analysis	
BIOM 6000	Cell Biology	
<b>Electives</b>		
Select three electives <sup>1</sup>		3
<b>Independent Study and Research</b>		<b>6.5</b>
BIOL 9999	Independent Study and Research	

<sup>1</sup> See the website for a list of electives: <http://www.bio.upenn.edu/graduate/handbook/academic-topics/course-requirements> (<http://www.bio.upenn.edu/graduate/handbook/academic-topics/course-requirements/>)

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2023 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.

## Sample Plan of Study

Code	Title	Course Units
<b>Year 1</b>		
<i>Fall</i>		
BIOL 7000	Advanced Topics in Current Biological Research	
BIOM 6000	Cell Biology or BIOL 441C Advanced Evolution	
BIOL 9999	Independent Study and Research	
<i>Spring</i>		
BIOL 5240	Genetic Analysis	
BIOL 4411	Evolutionary Ecology or BIOL 4517 Theoretical Population Biology	
Electives		
BIOL 9999	Independent Study and Research	
BIOL 9999	Independent Study and Research	
<i>Summer</i>		
Thesis Research		
<b>Year 2</b>		
<i>Fall</i>		
Additional Coursework		
BIOL 9999	Independent Study and Research	
Teaching Requirement		
<i>Spring</i>		
BIOL 6010	Communication for Biologists	
Additional Coursework		
BIOL 9999	Independent Study and Research	
Teaching Requirement		
<i>Summer</i>		
Candidacy Exam		
<b>Year 3 and Beyond</b>		
Dissertation		