

BIOLOGY: NEUROBIOLOGY, BA

Neurobiology is one of the most exciting fields within biology today. The basis of neurological disease, molecular mechanisms of brain function, and behavior are major foci of research in medicine, biotechnology, and academia. The Neurobiology Concentration provides fundamental training in brain physiology, coupled with a background in molecular genetics that is essential for understanding the molecular mechanisms of brain function at the gene and protein levels.

The minimum total course units (<https://www.college.upenn.edu/credits-needed-major>) for graduation in this major is 36. Double majors may entail more course units.

With permission from the Undergraduate Chair, two course units away or LPS courses may count toward the Biology major. This limit does not apply to Study Abroad.

For more information: <http://www.bio.upenn.edu/undergraduate/concentrations/neurobiology>

For information about the General Education requirements, please visit the College of Arts & Sciences Curriculum (<https://www.college.upenn.edu/curriculum>) page.

Code	Title	Course Units
College General Education Requirements and Free Electives		
Foundational Approaches + Sectors ¹ + Free Electives		19
Major Requirements		
<i>Introductory Biology</i>		
Select one of the following tracks:		2-3
Track 1:		
BIOL 121	Introduction to Biology - The Molecular Biology of Life	
BIOL 123	Introductory Molecular Biology Laboratory	
BIOL 124	Introductory Organismal Biology Lab	
Track 2:		
BIOL 101	Introduction to Biology A	
BIOL 102	Introduction to Biology B	
<i>Physics Requirement</i>		
PHYS 102	General Physics: Electromagnetism, Optics, and Modern Physics	1.5
or PHYS 151	Principles of Physics II: Electromagnetism and Radiation	
<i>Chemistry Requirement</i>		
Select 3 course units of Chemistry courses		3
<i>Math Requirement</i>		
Select 2 course units of Math courses		2
<i>Required Biology Courses</i>		
BIOL 221	Molecular Biology and Genetics	1
BIOL 251	Molecular and Cellular Neurobiology	1.5
Select one of the following:		1
BIOL 436	Molecular Physiology	
BIOL 442	Neurobiology of Learning and Memory	
BIOL 451	Neural Systems and Behavior	
<i>Required Biology Courses</i>		

Select 2 course units of Cell/Molec/Develop Neurobiology courses	2
Select 1 course unit of Systems & Integrative Neurobiology courses	1
<i>Research Requirement</i>	
BIOL 399 Independent Study	1
BIOL 499 Advanced Independent Study	1
<i>Thesis</i>	
SURB ²	
Total Course Units	36

- ¹ You may count no more than one course toward both a Major and a Sector requirement. For Exceptions, check the Policy Statement (<http://www.college.upenn.edu/sectors-policy>).
- ² Students are required to present their research at the annual Symposium on Undergraduate Research in Biology (SURB) poster session, held at the end of the Spring Term.

Honors

Applicants must have a minimum GPA of 3.25 in the major and the thesis must be approved by the departmental honors committee.

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2018 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.