

NEUROSCIENCE (B.S.)

The goal of the Neuroscience major is to provide students with a strong background in fundamental basic sciences and exposure to the integrative nature of neuroscience to allow students to understand nervous system function from a variety of perspectives. Students will emerge with a strong foundation in basic science and applied neuroscience that will make them competitive for post-graduate studies or employment in industry, government, health, and education.

The degree program is offered jointly through the Departments of Biological Sciences and Psychology. During the freshman year, or as early as possible, students interested in neuroscience should consult one of these departments to obtain information from an undergraduate advisor.

The Neuroscience major will lead to a Bachelor of Science (B.S.) degree. Candidates must complete 120 credits in course work including satisfaction of the University General Education Requirements (<http://bulletins.wayne.edu/undergraduate/general-information/general-education/>) and the College of Liberal Arts and Sciences Group Requirements (<http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/bachelors-degree-requirements/>), as well as the major requirements cited below. All course work must be completed in accordance with the regulations of the University (<http://bulletins.wayne.edu/undergraduate/general-information/academic-regulations/>) and the College (<http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/academic-regulations/>) governing undergraduate scholarship and degrees.

Major Requirements

Major requirements are divided into three categories: (A) Basic science courses, (B) Neuroscience core courses, and (C) Electives. Elective courses are organized into two sub-categories and students must select from each; this is to ensure breadth of exposure. Students must receive a grade of C-minus or better in all required major courses. A grade point average of 2.0 (C) is required for graduation. The major requires a minimum of three unique courses that do not count towards requirements of other declared majors.

Basic Science Courses

Students may double-count up to 11 - 12 credits with University General Education requirements.

Code	Title	Credits
Math		4
MAT 2010	Calculus I	
Statistics		3-4
PSY 2030	Statistical Methods in Psychology	
	or STA 1020 Elementary Statistics	
	or STA 2210 Probability and Statistics	
Biology		8
BIO 1510	Basic Life Mechanisms	
& BIO 1511	and Basic Life Mechanisms Laboratory	
BIO 2550	Fundamentals of Cell Biology for Neuroscience	
Chemistry		14
CHM 1100	General Chemistry I	
& CHM 1130	and General Chemistry I Laboratory	
CHM 1140	General Chemistry II	
& CHM 1150	and General Chemistry II Laboratory	
CHM 1240	Organic Chemistry I	
Biochemistry		3

BIO 3100 Cellular Biochemistry
or CHM 5600 Survey of Biochemistry

Physics		10
Select one of the following sequences:		
Option 1:		
PHY 2130	Physics for the Life Sciences I	
& PHY 2131	and Physics for the Life Sciences Laboratory	
PHY 2140	Physics for the Life Sciences II	
& PHY 2141	and Physics for the Life Sciences Laboratory	
Option 2:		
PHY 2170	University Physics I for Scientists and Engineers	
& PHY 2171	and University Physics I Experimental Laboratory	
PHY 2180	University Physics II for Scientists and Engineers	
& PHY 2181	and University Physics II Experimental Laboratory	
Social/Behavioral Science		4
PSY 1010	Introductory Psychology	
Total Credits		46-47

Neuroscience Core Courses

Code	Title	Credits
BIO 3200	Human Physiology	3
PSY 3330	Systems Neuroscience	3
Total Credits		6

Elective Courses

Select 18 credits, with a minimum of 6 credits each from the Behavioral and Cognitive Neuroscience and Cellular and Molecular Neuroscience categories. Students may choose directed study courses to complete the 18 credit requirement.

Code	Title	Credits
Behavioral and Cognitive Neuroscience		
BIO 4220	Biological Dimensions of Evolutionary Psychology	3
KIN 3550	Motor Learning and Control	3
NEU 4200	Neurobiology of Addiction	3
NFS 5170	Nutrition, Physical Activity, and the Brain	3
PHI 5230	Philosophy of Science	4
PHI 5550	Philosophy of Mind	4
PSY 3040	Psychology of Perception: Fundamental Processes	3
PSY 3060	Psychology of Learning and Memory: Fundamental Processes	3
PSY 3080	Cognitive Psychology: Fundamental Processes	3
PSY 4140	Hormones and Behavior	3
NEU 4795	Special Topics in Behavioral and Cognitive Neuroscience	3
PSY 5040	Cognitive Neuroscience	3
PSY 5070	Neuropharmacology	3
PSY 5080	Cellular Basis of Animal Behavior	3
PSY 5330	Human Neuropsychology	3
PSY 5440	Developmental Neuropsychology	3
Cellular and Molecular Neuroscience		
BIO 3070	Genetics	4-5
BIO 4120	Comparative Physiology	4
BIO 4690	Molecular and Cellular Neurobiology	3
NEU 4895	Special Topics in Cellular and Molecular Neuroscience	3
BIO 5040	Biometry	4

BIO 5620	Developmental Biology	3
BIO 5660	Neural Signaling in Health and Disease	3
BIO 5890	Neuroplasticity	3
BIO 5996	Senior Research	1-2
BIO 6055	Biology of the Eye	3
BIO 6180	Molecular and Cellular Biology of Lipids	3
BIO 6190	Advanced Special Topics	6
BIO 6690	Special Topics in Neurobiology	3
NEU 5470	Preclinical and Clinical Assessments of Neurologic Disease I	3
NEU 6470	Preclinical and Clinical Assessments of Neurologic Disease II	3
PHY 3750	Introduction to Computational Methods	1
PHY 6290	Survey of Biophysics	3
PHY 6750	Applied Computational Methods	2
ROC 6710	Physics in Medicine	3
Directed Study		
NEU 4050	Science Advocacy and Public Engagement	2
NEU 4990	Introduction to Research Practice	1
NEU 4991	Undergraduate Research in Neuroscience	1
NEU 4992	Undergraduate Research in Neuroscience	2
NEU 4993	Undergraduate Research in Neuroscience	3
NEU 4994	Undergraduate Research in Neuroscience	4
NEU 6990	Honors Introduction to Research Practice	1
NEU 6992	Honors Undergraduate Research in Neuroscience	2
NEU 6993	Honors Undergraduate Research in Neuroscience	3
NEU 6994	Honors Undergraduate Research in Neuroscience	4
NEU 6998	Honors Thesis in Neuroscience	3

Neuroscience Honors (B.S. Program)

To be recommended for an honors degree from this program, a student must maintain a cumulative g.p.a. of at least 3.30 and complete a minimum of 14 honors course credits including:

Code	Title	Credits
One 42XX level Honors Seminar		3
NEU 6990	Honors Introduction to Research Practice	1
Complete at least two credits of Honors research with one of the following		2
NEU 6992	Honors Undergraduate Research in Neuroscience	
NEU 6993	Honors Undergraduate Research in Neuroscience	
NEU 6994	Honors Undergraduate Research in Neuroscience	
Complete an Honors thesis		3
NEU 6998	Honors Thesis in Neuroscience	
Remaining credits to be earned in honors sections or honors options within the Neuroscience major coursework.		5
Total Credits		14