

Neuroscience Major and Minor

www.neuroscience.pitt.edu

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Neuroscience is the study of the biological bases and consequences of behavior, with a special focus on the role of the nervous system in these processes. The field has emerged during the past three decades as part of the explosive growth of interest in the biology of the brain and its contribution to understanding and treating neurological and psychiatric disorders. The neuroscience major provides a broad and challenging sequence of courses in biological sciences, chemistry, mathematics, and physics, in addition to both introductory and advanced courses in neuroscience. Students intending to major in neuroscience should begin taking neuroscience courses in their sophomore year, after many of the basic science courses are completed.

With a solid grounding in natural science, majors will be able to apply the relevant portions of these courses to problems concerning nervous system function. Students have the opportunity to receive course credit for original research projects that they conduct in collaboration with department faculty. The small size of the upper-level courses and the opportunity to work closely with individual faculty members in research laboratories permit closer relationships between students and faculty than are often found in larger departments. Many students choose the bachelor's degree in neuroscience as preparation for a career in medicine. In addition, it also prepares students for: careers in health-related fields such as dentistry, optometry, pharmacy, public health, physical therapy, and exercise physiology; postgraduate training in neuroscience and a future research career in a university, institute, pharmaceutical company, or hospital; research assistant positions in pharmaceutical, hospital, or university settings; and public and private high school teaching; additional biology courses may be required.

Required courses for the Neuroscience major

The neuroscience major requires the completion of 59 credits distributed as follows.

Core courses

NROSCI 1000 Introduction to Neuroscience
NROSCI 1011 Functional Neuroanatomy **or** NROSCI 1013
Functional Neuroanatomy (UHC)
NROSCI 1012 Neurophysiology
NROSCI 1017 Synaptic Transmission

Advanced elective courses

Two of the following

NROSCI 1014 Speaking of Science
NROSCI 1026 Foundations of Clinical Neurophysiology
NROSCI 1028 Signaling Pathways in Synaptic Plasticity
NROSCI 1030 Psychiatric Disorders and Brain Function
NROSCI 1032 Functional Org of the Human Nervous Sys
NROSCI 1033 Neural Basis of Vision
NROSCI 1034 Neural Basis of Cognition
NROSCI 1036 Neurobiology of Aging
NROSCI 1040 Biological Bases of Learning and Memory
NROSCI 1041 Developmental Neurobiology
NROSCI 1042 Neurochemical Basis of Behavior
NROSCI 1043 Neural Plasticity
NROSCI 1140 Honors Biological Basis of Learning and
Memory (UHC)

Writing course

One of the following

NROSCI 1800 Neuroscience Writing Practicum
NROSCI 1801 Neuroscience Writing Practicum
NROSCI 1962 Thesis Writing Practicum

Capstone Requirement

One of the following

NROSCI 1027 Neuroscience Pro Seminar
NROSCI 1901 Independent Research

Co-requisite Courses

Biological Science courses

BIO SC 0150 Foundations of Biology 1
BIO SC 0050 Foundations of Biology Lab 1
BIO SC 0160 Foundations of Biology 2
BIO SC 0060 Foundations of Biology Lab 2
BIO SC 1000 Biochemistry
BIO SC/NROSCI 1250 Human Physiology

Chemistry courses

CHEM 0110 General Chemistry 1
CHEM 0120 General Chemistry 2
CHEM 0310 Organic Chemistry 1
CHEM 0320 Organic Chemistry 2
CHEM 0345 Organic Chemistry Lab

Mathematics course

MATH 0220 Analytic Geometry and Calculus 1

Physics courses

PHYS 0110 Introduction to Physics 1

PHYS 0111 Introduction to Physics 2

Grade requirements: A grade of B- or better is required in NROSCI 1000. A minimum GPA of 2.0 in the core, advanced elective, and co-requisite courses is required for graduation.

Satisfactory/No Credit option: No course that counts toward the major can be taken on an S/NC basis.

Declaring the major: In order to declare the neuroscience major, a student must have completed BIOSC 0150, BIOSC 0160, CHEM 0110, and CHEM 0120 with a grade of C or better.

Related area: The co-requisite biological science and chemistry courses satisfy the related area of the major.

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Checklist and plan of study for the Neuroscience major; other plans are possible

Fall Freshman Year

_____ BIOSC 0150 or BIOSC 0715 (UHC)

_____ CHEM 0110 or CHEM 0710 (UHC)

Spring Freshman Year

_____ BIOSC 0160 or BIOSC 0716 (UHC)

_____ BIOSC 0050

_____ CHEM 0120 or CHEM 0720 (UHC)

_____ MATH 0220

Fall Sophomore Year

_____ NROSCI 1000 or NROSCI 1003 (UHC) or
NROSCI 1250

_____ BIOSC 0060

_____ CHEM 0310

Spring Sophomore Year

_____ NROSCI 1000 or NROSCI 1003 (UHC) or
NROSCI 1250

_____ CHEM 0320

_____ CHEM 0345

Fall Junior Year

_____ NROSCI 1901 or BIOSC 1000 ¹

_____ NROSCI 1013 *

_____ PHYS 0110 or PHYS 0174

Spring Junior Year

_____ NROSCI 1017

_____ NROSCI 1011 *

_____ PHYS 0111 or PHYS 0175

_____ PHYS 0212 or PHYS 0219 (optional)

_____ NROSCI 1901 or BIOSC 1000 ¹

* Take one of these courses

Fall Senior Year

_____ NROSCI 1_____ ²

_____ NROSCI 1961 Thesis Research ¹

Spring Senior Year

_____ NROSCI 1012

_____ NROSCI 1_____ ²

_____ NROSCI 1800 or 1962 Writing Practicum

_____ NROSCI 1961 Thesis Research ³

_____ Capstone Requirement ⁴

1. Research is recommended; BIOSC 1000 is required.
2. NROSCI 1014, NROSCI 1026, NROSCI 1028, NROSCI 1030, NROSCI 1032, NROSCI 1033, NROSCI 1034, NROSCI 1036, NROSCI 1040, NROSCI 1041, NROSCI 1042, NROSCI 1043, NROSCI 1140
3. NROSCI 1800, NROSCI 1801, or NROSCI 1962 (W-practicum) should be taken with one of the advanced electives listed in 2 (above).
4. NROSCI 1027 Neuroscience Pro Seminar, NROSCI 1901 Independent Research

Checklist for the Neuroscience minor *

Option 1

_____ NROSCI 1000 or 1003 (UHC) **

_____ NROSCI 1011

_____ NROSCI 1012

_____ NROSCI 1017

_____ NROSCI _____ (elective if required)

Option 2

_____ NROSCI 1000 / NROSCI 1003 (UHC) **

_____ NROSCI 1_____ ¹

_____ NROSCI 1_____ ¹

_____ NROSCI 1_____ ²

_____ NROSCI _____ (elective if required)

*The NROSCI Minor requires the completion of a minimum of 14 credits. Additional electives must be taken as needed to satisfy this requirement. Please consult the NROSCI Advisor for suggestions.

** A grade of C or better must be earned in NROSCI 1000 or 1003.

1. Eligible courses are: NROSCI 1011, NROSCI 1012, NROSCI 1017
2. Eligible courses are: NROSCI 1020, NROSCI 1030, NROSCI 1032, NROSCI 1034, NROSCI 1035, NROSCI 1036, NROSCI 1040, NROSCI 1041, NROSCI 1042

Note: Students must apply for any official minor they will complete or have completed at the time they apply for graduation.