MAJOR IN

NEUROSCIENCE

School of Molecular & Cellular Biology

How does our brain control movement? How do we learn new information and acquire new skills? How do we recall memories? Why do we feel sad or depressed? Neuroscience is an exciting and rapidly-expanding field that explores the biological, chemical, and physical processes behind these and many other complex functions performed by our brain and entire nervous system.

The University of Illinois neuroscience major is housed in the School of Molecular & Cellular Biology, where faculty have been driving transformative advances in neuroscience for decades. We seek to understand the causes of a variety of disorders, from neurodevelopmental to neurodegenerative disorders, from brain cancer to epilepsy, and to develop biomedical treatments for them. As a neuroscience major, you'll take a variety of cutting-edge courses and develop critically-important laboratory skills. Students conduct research alongside faculty who lead pioneering programs in sensory processing, neuroendocrinology, physiology of neurons and glia, regeneration, and cell signaling with advanced techniques, such as optogenetics and neuroimaging.

Whatever your dream—furthering your education and obtaining a PhD, MD, or PharmD or pursuing a career in industry—you will be well-prepared. Neuroscience majors become physicians, clinical psychologists, therapists (physical, speech, language), pharmaceutical or neurodiagnostic technicians, policymakers, and scientists with pharmaceutical or biotechnology companies, universities, and government agencies.

PROGRAM OVERVIEW

The neuroscience curriculum combines the study of molecular and cellular biology with neuroscience, neurophysiology, neurochemistry, and neuro-pathology. Students will gain an understanding of brain function at multiple levels, from behavior and information processing to systems and integrative physiology. We use model organisms like fruit flies, fish, and mice and we will explore cells at all levels, from the dish to cells functioning in animals.

MCB faculty have designed a number of new courses, such as Neurobiology of the Senses, Neurobiology of Mental Illness, Neuro and Molecular Pharmacology, and Cell & Membrane Physiology. We have also created advanced lab courses, including a neuroanatomy lab.

CONTACT INFORMATION

(217) 333-6774; advising@mcb.illinois.edu

As a neuroscience major, you can:

- **Conduct research in a neuroscience lab.**
- **Study abroad while earning credit in advanced courses in your major. Research and physician shadowing opportunities are also possible abroad.**
- **Develop leadership skills by joining one of many student organizations of interest to neuroscience majors.**
- **Pursue an internship at a pharmaceutical firm, community medical clinic, or related opportunity.**
- **Gain valuable advice and build relationships with alumni and peers through our mentoring programs.**

Neuroscience Major Four-Year Plan of Study

SCHOOL OF
MOLECULAR &
CELLULAR BIOLOGY

Instructional Program

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June 2022

This plan is to be used only as a guide. Many factors may affect the sequence and timing of courses. Course selections are best made in consultation with an advisor. For an appointment call (217) 333–6774, or use our online scheduling system at http://go.illinois.edu/mcbappt.

FIRST YEAR	
FALL	SPRING
MCB 170 (3 hrs) MATH 220 (5 hrs) **or** MATH 221 (4 hrs) CHEM 102 (3 hrs) **and** CHEM 103 (1 hr) *Gen Ed/Language/Elective (3 to 5 hrs)* LAS 101 (1 hr) **or** LAS 122 (1 hr) TOTAL CREDIT HOURS: 15–18	MCB 150 (4 hrs) MATH 231 (3 hrs) **or** STAT 212 (3 hrs) CHEM 104 (3 hrs) **and** CHEM 105 (1 hr) PSYC 100 (4 hrs) TOTAL CREDIT HOURS: 15
SECOND YEAR	
FALL	SPRING
MCB 250 (3 hrs) **and** MCB 251 (2 hrs) CHEM 232 (4 hrs) **and** CHEM 233 (2 hrs) *Gen Ed/Language/Elective (3 to 5 hrs)* TOTAL CREDIT HOURS: 14–16	MCB 252 (3 hrs) **and** MCB 253 (2 hrs) PHYS 101 (5 hrs) PSYC 210 (3 hrs) **or** PSYC 224 (3 hrs) *Gen Ed/Language/Elective (3 to 5 hrs)* TOTAL CREDIT HOURS: 16-18
THIRD YEAR	
FALL	SPRING
MCB 314 (3 hrs) MCB 354 (3 hrs) PHYS 102 (5 hrs) *Gen Ed/Language/Elective (3 to 5 hrs)* TOTAL CREDIT HOURS: 14–16	MCB 460 Lab (2 hrs) Advanced Elective (3 hrs) Advanced Elective (3 hrs) *Gen Ed/Language/Elective (3 to 5 hrs)* *Gen Ed/Elective (3 to 4 hrs)* TOTAL CREDIT HOURS: 14-17
FOURTH YEAR	
FALL	SPRING
MCB 461 (3 hrs) Advanced Elective (3 hrs) *Gen Ed/Language/Elective (3 to 5 hrs)* *Gen Ed/Elective (3 to 4 hrs)* *Gen Ed/Elective (3 to 4 hrs)* TOTAL CREDIT HOURS: 15-18	MCB 462 (3 hrs) Advanced Elective (3 hrs) Advanced Elective (3 hrs) *Gen Ed/Language/Elective (3 to 5 hrs)* *Gen Ed/Elective (3 to 4 hrs)* TOTAL CREDIT HOURS: 15-18

Only courses from the Approved Advanced Neuroscience Elective Course List will count toward the requirement (15 hours minimum). Graduate level courses (500– or 600–level) will not count toward the requirement.

Neuroscience Major

Degree: Bachelor of Science in Liberal Arts & Sciences

Major: Neuroscience

Minimum Required Courses: 83–84 hours, including 29 hours of 300- or 400-level courses; 12 hours of advanced level courses in the major must be taken on the Urbana-Champaign campus.

In addition, undergraduate research (MCB 290) in an MCB Neuroscience-designated lab is strongly recommended for students planning to attend graduate school. No more than 10 hours of MCB 290 credit may be counted toward the 120 hours required for a degree in Neuroscience.

Students earning a degree in Neuroscience may not also earn a second degree in Biochemistry. Students earning a degree in Neuroscience may not double major in Molecular and Cellular Biology.

General Education Requirements: Neuroscience majors must complete all College of LAS degree requirements:

las.illinois.edu/students/requirements

Minimum GPA Required for Graduation: Neuroscience majors are required to maintain a major GPA and cumulative GPA of 2.00 or better in order to graduate.

Minimum Hours Required for Graduation: 120 hours

Neuroscience Introductory Courses (11 credit hours total)	
3	MCB 170: Society and the Brain
4	MCB 150: Molecular and Cellular Basis of Life
4	PSYC 100: Introductory Psychology
Neuroscience Core Courses (13 credit hours total)	
3	MCB 250: Molecular Genetics
2	MCB 251: Experimental Techniques in Molecular Biology
3	MCB 252: Cells, Tissues, and Development
2	MCB 253: Experimental Techniques in Cell Biology
3	PSYC 210: Behavioral Neuroscience **or** PSYC 224: Cognitive Psychology
Advanced Neuroscience Courses (14 credit hours total)	
3	MCB 314: Introduction to Neurobiology
3	MCB 354: Biochem & Phys Basis of Life
2	MCB 460: Neuroanatomy Lab
3	MCB 461: Cell & Molecular Neuroscience
3	MCB 462: Integrative Neuroscience
Advanced Neuroscience Elective Courses (15 credit hours minimum)	
15	Five additional three- or four-credit hour courses (minimum of 15 hours) at the 300- to 400-level from the Approved Advanced Neuroscience Electives Course List are also required.
Supporting Courses (30-31 credit hours total)	
4-5	MATH 220 Calculus **or** MATH 221: Calculus I
3	MATH 231: Calculus II **or** STAT 212: Biostatistics
8	CHEM 102: General Chemistry I, CHEM 103: General Chemistry Lab, CHEM 104: General Chemistry II, **and** CHEM 105: General Chemistry Lab II
5	CHEM 232: Elementary Organic Chemistry I **and** CHEM 233: Elementary Organic Chem Lab I
10	PHYS 101: College Physics: Mech & Heat **and** College Physics 102: E&M & Modern

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Feb 2022

Approved Advanced Neuroscience Elective Course List

Course title	Credit Hours
MCB 401: Cell & Membrane Physiology	3
MCB 402: Systems & Integrative Physiology	3
MCB 432: Computing in Molecular Biology	3
MCB 466: Neuro & Molecular Pharmacology	3
MCB 481: Developmental Neurobiology	3
MCB 493 sxn NOS: Neurobiology of the Senses	3
MCB 493 sxn NMI: Neurobiology of Mental Illness	3
SIB 432: Genes and Behavior	3
PSYC 302: Applied Neuroscience	3