

NEUROSCIENCE, MS

Overview

for the degree of Master of Science in Neuroscience

The Master of Science in Neuroscience offers both course-based and research-based tracks that provide students with a thorough foundation in neuroscience. Through an integrated and intentional curriculum, students develop a strong understanding of the molecular and cellular biology underlying neuronal systems and brain function across multiple levels of organization.

Students also gain the tools and training needed to investigate complex behaviors, information processing in neural networks and integrative physiological systems, and a variety of neurological disorders. Both tracks equip students with the knowledge, analytical tools, and technical skills to manage, analyze, and interpret datasets across diverse neurobiological systems.

Graduates are prepared for careers in healthcare, the pharmaceutical industry, biologically and environmentally relevant government agencies, and other data-intensive biomedical research fields.

Course-based track

Students will receive thorough preparation in molecular and cellular neurobiology, neuroendocrinology, neurophysiology, neurochemistry, neuropathology, neuroanatomy, genomics, and structural neurobiology. This will come from coursework and laboratory classes, as well as research opportunities, and discovery experiences such as advanced optogenetics and neuroimaging technologies. A thesis is not required for this track.

Research-based track

Students will receive preparation in the same topics as the course-based track. In addition, students receive high quality research opportunities that prepare them for future research careers. A thesis is not required for this track. However, students will be required to present at a University-sponsored poster session.

Degree Requirements

for the degree of Master of Science in Neuroscience

Code	Title	Hours
12 credit hours are required at the 500 level (Core and/or Electives)		
20 credit hours are required at the 400- or 500-level		
Neuroscience Core (Course-based & Research-based Tracks)		13
The following courses are required for both Course-based and Research-based tracks		
MCB/NEUR 461	Cell & Molecular Neuroscience	3
MCB/NEUR 462	Integrative Neuroscience	3
NEUR 529	Professional Development Program (unless NEUR 520 PDP has been previously completed)	1

NEUR/MCB 542	Interdisciplinary Approaches to Neuroscience I	3
NEUR/MCB 543	Interdisciplinary Approaches to Neuroscience II	3

Course-based Track 19

Minimum of 19 credit hours required from the elective options

CB 514	Neurotoxicology
ECE 421	Neural Interface Engineering
IB/NEUR 432	Genes and Behavior
MCB 401	Cellular Physiology
MCB 410	Developmental Biology, Stem Cells and Regenerative Medicine
MCB 418	Neurobiology of the Senses
MCB 432	Computing in Molecular Biology
MCB 450	Introductory Biochemistry
MCB 460	Neuroanatomy Laboratory
MCB 466	Neuro & Molecular Pharmacology
MCB 529	Special Topics in Cell and Developmental Biology
MCB 540	Scientific Writing
PSYC 404/ NEUR 405	Cognitive Neuroscience
PSYC/NEUR 414	Brain, Learning, and Memory
PSYC/NEUR 433	Evolutionary Neuroscience

Research-based Track 19

Research

Minimum of 15 credit hours required of approved 590 courses

BIOC 590	Individual Topics
BIOP 590	Individual Topics
CDB 590	Individual Topics
MICR 590	Individual Topics
MIP 590	Individual Topics
NEUR 590	Indiv Topics Neuroscience

Electives

Minimum of 4 credit hours required from the elective options

CB 514	Neurotoxicology
ECE 421	Neural Interface Engineering
IB/NEUR 432	Genes and Behavior
MCB 401	Cellular Physiology
MCB 410	Developmental Biology, Stem Cells and Regenerative Medicine
MCB 418	Neurobiology of the Senses
MCB 432	Computing in Molecular Biology
MCB 450	Introductory Biochemistry
MCB 460	Neuroanatomy Laboratory
MCB 466	Neuro & Molecular Pharmacology
MCB 529	Special Topics in Cell and Developmental Biology
MCB 540	Scientific Writing
PSYC 404/ NEUR 405	Cognitive Neuroscience
PSYC/NEUR 414	Brain, Learning, and Memory
PSYC/NEUR 433	Evolutionary Neuroscience

Additional (400- and 500-level) courses can be considered upon approval of an advisor. Advisors will ensure that students fulfill the 500-level hour requirement.

Total Hours	32
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Requirement	Description
Other requirements may overlap	
Minimum Hours Required within the 8 Unit	
Minimum 500-level Hours Required	12
Overall	
Minimum GPA	3.0

Learning Outcomes

for the degree of Master of Science in Neuroscience

Graduates of the MS in Neuroscience degree program will be able to:

1. Synthesize, understand, and critically evaluate core neuroscientific principles, particularly within their chosen fields of study.
2. Apply knowledge of neuroscientific methods and techniques to evaluate, create, design and carry out experiments.
3. Analyze and interpret scientific data and draw conclusions from it.
4. Effectively communicate (both orally and in writing) to professional and lay audiences.
5. Conduct research ethically and professionally.
6. Develop effective leadership and interpersonal skills to foster collaborations.

Contact Information

for the degree of Master of Science in Neuroscience

Contact Melissa Michael, Assoc. Dir. for Curriculum & Instruction
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The MS in Neuroscience is jointly offered by School of Molecular & Cellular Biology (<https://mcb.illinois.edu>) and The Neuroscience Graduate Program (<https://neuroscience.illinois.edu>).

College of Liberal Arts & Sciences

College of Liberal Arts & Sciences website (<https://las.illinois.edu/>)

Admissions

Graduate College Admissions & Requirements (<https://grad.illinois.edu/admissions/apply/>)