

# Neuroscience

## Biology:

**Professors: Cassia C. Oliveira and David Thomas**

**Associate Professors: Alexander Beeser and Maryline Jones**

**Assistant Professor: Eric South**

## Psychology:

**Associate Professor: Jennifer Daniels**

**Assistant Professors: Britt Florkiewicz, Robert Miller, Allison Sonia, and Nikki Yonts**

The Neuroscience major provides students with a foundational understanding of the biology and function of the nervous system and brain. The major offers courses spanning topics from the intricate processes that control neural activity to the anatomy and function of brain regions and the intersection of neurobiology and behavior. True to the liberal arts experience, the Neuroscience major draws from several academic disciplines, and students in the major will take many courses in biology and psychology as well as neuroscience as they develop their understanding of how the brain and nervous system produce the mind and behavior. The program also emphasizes research methodology, data analysis, and statistics as it pertains to the study of the nervous system and behavior.

**Note: To graduate with a Bachelor of Arts or Bachelor of Science degree from Lyon College, students must successfully complete a minimum of 120 semester credit hours comprised of our required Core curriculum (44-48 hours), the requirements of at least one major (credit hours vary per major), and a selection of our Liberal Arts electives. They must also earn at least a 2.00 cumulative grade point average for all work taken at Lyon College and a 2.00 cumulative grade point average in their major, minor, and concentration.**

## Neuroscience Degrees

### Neuroscience Major (BS)

#### Summary of Requirements for a Major in Neuroscience

Item #	Title	Credits
BIO 110	Principles of Biology I	4
BIO 250	Cell Biology	4
CHM 110	General Chemistry I	4
CHM 120	General Chemistry II	4
PSY 101	Introduction to Psychology	3
PSY 235	Statistics for the Behavioral Sciences	3
PSY 250	Research Methods with Human Participants	3
PSY 318	Biological Psychology	3
PSY 335	Abnormal Psychology	3
NEU 301	Neuroscience Foundations	3
NEU 302	Biological Basis of Perception & Movement	3
NEU 303	Cognitive Neuroscience	3
NEU 401	Clinical Neuropathology	3
NEU 490	Senior Evaluation	0
	Neuroscience Elective Courses	10-11

## CORE CURRICULUM

Item #	Title	Credits
	Core Curriculum Requirements (In addition to Major hours)	44-48
	<b>Total Credits</b>	<b>97-102</b>

## Neuroscience Elective Courses

Select 3 courses, at least one from each group

### Group A

Item #	Title	Credits
BIO 252	Genetics	4
BIO 352	Molecular Biology	4
BIO 356	Biochemistry	4
BIO 360	Comparative Physiology	4
BIO 364	Developmental Biology	4

### Group B

Item #	Title	Credits
PSY 312	Sensation & Perception	3
PSY 339	Learning and Cognition	3
PSY 342	Introduction to Cognitive Psychology	3
PSY 353	Introduction to Evolutionary Psychology	3

## Neuroscience (NEU) Courses

### NEU 301: Neuroscience Foundations

This course introduces students to the field of neuroscience, explores the cellular and molecular basis of neural systems, and discusses the neural basis of cognition. Students are expected to leverage their understanding of biology and chemistry to build a working knowledge of neuroscience fundamentals. This online class features optional live sessions.

**Credits** 3

**Prerequisites**

BIO 110

CHM 110

CHM 120

### NEU 302: Biological Basis of Perception & Movement

Perception and Movement are fundamentally driven by biological processes. This course provides students with an understanding of the various systems and organs that play a role in the human ability to perceive the world and move through it. It builds upon Neuroscience Fundamentals to allow students to understand the impact of core neuroscience concepts.

**Credits** 3

**Prerequisites**

NEU 301

## NEU 303: Cognitive Neuroscience

Cognitive Neuroscience is the study of the biological process which underlies behavior, learning, thought, and experience. This course builds on students' understanding of neuroscience and psychology to explore information processing, behavior, language, and more. Special attention is paid to the neurological factors which drive behavior and give rise to a range of disorders.

**Credits** 3

**Prerequisites**

NEU 302

PSY 101

## NEU 401: Clinical Neuropathology

This course captures foundational concepts in modern psychiatric care and neuroscience and makes them clear and accessible. It provides students with a broad knowledge base covering many of the latest developments in the field of neuroscience, including our most modern understanding of developmental disorders, various pathologies of neurological systems, the role of microbiology in neurological care and more. Upon completion, students will be well prepared to pursue graduate study or work in the sciences, armed with a strong understanding of the current state of both Neuroscience and Mental Health and the connections between both.

**Credits** 3

**Prerequisites**

NEU 303

PSY 101

## NEU 490: Senior Evaluation

This course provides graduating seniors the opportunity to assess their knowledge of neuroscience, and to assess the effectiveness of the program. Instead of regular class meetings, students will complete a set of assessment tools, including a knowledge test and surveys that allows students to provide feedback concerning their individual learning experiences. The course is graded as pass/ fail.

**Credits** 0

**Prerequisites**

Senior standing

## PSY 250: Research Methods with Human Participants

This course will introduce students to the language of research, ethical principles and challenges, and the elements of doing research with human participants. This class is designed for non-psychology majors and cannot be substituted for PSY 240.

**Credits** 3

**Prerequisites**

PSY 235 **or**

BIO 300 **or**

BUS 323