Neuroscience

Don Paetkau, Program Coordinator
278 Science Hall
574-284-4684

FACULTY
T. Aubele-Futch, J. Rowsell

PROGRAM DESCRIPTION

The scientific community has been and continues to be fascinated by the prospect of unlocking the intricacies of the brain. Explorations in neuroscience often lead to questions about a human's personality, emotions, senses, diseases, or even the ability to develop artificial intelligence. There are currently many more questions than answers in this area. Neuroscience is an interdisciplinary field that has its foundation within psychology and biology, but incorporates concepts across many disciplines such as art, music, philosophy, chemistry, physics, and math to explore how our most complex organ, the brain, works.

The Neuroscience program will provide students with a foundation in Neuroscience that will allow her to formulate questions and interpret current findings about the brain. The minor in Neuroscience is a chance for students to explore the field by integrating coursework and laboratory experiments across different disciplines.

NEUROSCIENCE PROGRAM LEARNING OUTCOMES

- A student shall be able to correctly answer questions about basic concepts in neuroscience.
- A student will demonstrate both conceptual understanding and procedural knowledge of common neuroscience techniques, pertaining to both theoretical and applied knowledge.
- A student will be able to demonstrate an understanding of scientific methodology and experimental design, including what constitutes good evidence in scientific literature.
- A student will be able to clearly present scientific data from review and original research articles in both oral and written form.

Minor in Neuroscience—NEUR (22–23 hours)

All of the following:

BIO 155	Foundations of Molecular Biology	2 hours
BIO 157	Foundations of Cellular Biology	2 hours
BIO 235	Foundations of Neuroscience	4 hours
PSYC 156	Introduction to Psychology: Culture and Systems	3 hours
or PSYC 157	Introduction to Psychology: Science for the Citizen	3 hours
PSYC 234/	Neuropsychology	3 hours
PSYC 234L	Neuropsychology Lab (required)	1 hour

One of the following:

BIO 214	Human Physiology	4 hours
BIO 328	General Physiology	4 hours

One of the following:

BIO 232	Animal Behavior	4 hours
PSYC 326	Abnormal Psychology	3 hours
PSYC 449	Sensation and Perception	3 hours

NEUROSCIENCE COURSES (NEUR)

185 First-Year Seminar: I like brains (1)

The purpose of this course will be to provide you with a survey of concepts, principles, and theories of neuroscience, to introduce you to the breadth of the field as well as to the ways in which neuroscience can be 'connected' with many other fields of study. It is thus designed to help you understand this inherently interdisciplinary field. During the course of the semester we will discuss some of the sub-disciplines within neuroscience (e.g. molecular, cellular, cognitive, and behavioral points of view), research in neuroscience happening on-campus, how neuroscience relates to other disciplines (such as biology, physics, psychology, and the arts). We will also discuss the major as a whole, including course requirements, opportunities available outside of the classroom, and the different trajectories that you might pursue within the major.

385 Neuroscience Research Seminar (1)

The junior seminar in Neuroscience provides an opportunity for students and faculty to examine the latest research in Neuroscience. Each student will work with the instructor to choose a primary research article and accompanying review article to formally present to her classmates. All of the presentations will fit the themes of the year, but students are encouraged to find papers that interest them and fit with their particular concentration. Each week one student will provide a ~25 minute presentation of her research article with the appropriate background material. The other students in the class, having read the research and review article prior to class, will come to class prepared to discuss and critique the research being presented. One student will be assigned as the primary reviewer to help encourage discussion. This seminar format provides students the opportunity to perform three important components of science education: the reading, the oral presentation and the critique of primary research literature. Prerequisite: BIO 235 and PSYC 234.

485 Neuroscience-Senior Research (4)

This course is designed specifically for Neuroscience majors of senior standing to complete their individual senior comprehensive project. Students will have an opportunity to design, run, and analyze a research project under direct supervision of a faculty member. Students will read and analyze literature pertinent to their project and present their work in written and oral formats. Prerequisite: NEUR 385.