

BEHAVIORAL NEUROSCIENCE (BNS)

Courses and Descriptions

BNS 107 Life Science: Brain and Behavior 3 Credits

An introduction to the biology of the human brain and the rest of the human nervous system. Topics in neuroscience are covered in molecular, cellular, and systematic terms. Additional material is presented on the origins and effects of neurological and psychiatric diseases. This course counts towards the fulfillment of the Disciplinary Perspectives element of the CLAS general education curriculum.

BNS 250 Biostatistics 4 Credits

This course will assist students with acquiring the skills necessary to design, conduct, and interpret research studies. Emphasis will be on learning how to develop experimental designs to translate theoretical concepts into testable hypotheses. Experiments conducted during laboratory sessions will use laboratory mice and will use equipment for measuring animal behavior. Students will gain experience collecting, analyzing, writing and orally presenting their research results. Three hours of lecture and one three-hour lab per week. Prerequisite(s): MTH 105 or higher or placement into MTH 210, grade of "C" or better in one lab science course.

Corequisite(s): BNS 250L.

BNS 250L Biostatistics Lab 0 Credits

This lab is a co-requisite and must be taken with the corresponding course. Corequisite(s): BNS 250.

BNS 275 Behavioral Neuroscience 4 Credits

An introductory behavioral neuroscience course including basic neuroanatomy and neurophysiology of movement, ingestive, reproductive, emotional, and learning behaviors. Emphasis is on the structure/function relationships that allow animals to make appropriate physiological and behavioral responses to the environment. Three hours of lecture and one three-hour lab per week. Prerequisite(s): BIO 115 & BIO 116.

Corequisite(s): BNS 275L.

BNS 275L Behavioral Neuroscience Lab 0 Credits

This lab is a co-requisite and must be taken with the corresponding course.

Corequisite(s): BNS 275.

BNS 310 Neurobiology 4 Credits

A lecture-laboratory course investigating the structure and function of the nervous system. Lecture topics include organization of the nervous system, neuroanatomy, neurophysiology, neurochemistry, physiology of sensory systems, biological aspects of nervous system diseases, and behavior. Laboratory exercises include study of anatomy of the nervous system, nerve cell recording, modern neuroanatomical techniques, and the neural basis of animal behavior. Three hours of lecture and one three-hour lab per week. Prerequisite(s): BIO 115, BIO 116 with a grade of C or better in each course. Corequisite(s): BNS 310L.

BNS 310L Neurobiology Lab 0 Credits

This lab is a co-requisite and must be taken with the corresponding course. Prerequisite(s): BIO 115, BIO 116 with a grade of C or better in each course. Corequisite(s): BNS 310.

BNS 360 Neurochemistry 4 Credits

Examines the fundamentals of neurochemistry, including the neuroanatomical distribution, pharmacology, and functions of neurotransmitters; signal transduction pathways; behavioral and physiological effects of chemicals either used therapeutically to treat biopsychological disorders or that may be abused for their psychotropic effects; and mechanisms and models for the study of drug action. Three hours of lecture and one three-hour lab per week. Prerequisite(s): BIO 115, BIO 116, CHE 122, CHE 123 with a grade of C or better in each course.

Corequisite(s): BNS 360L.

BNS 360L Neurochemistry Lab 0 Credits

This lab is a co-requisite and must be taken with the corresponding course. Corequisite(s): BNS 360.

BNS 375 Neuroethology: Circuits of Behavior 4 Credits

Neuroethology is the study of the neural and physiological basis of animal behavior. This course focuses on the specific behavioral problems faced by animals in their natural habitats, and the ways in which their nervous systems solve these problems. The mechanisms that underlie complex behaviors such as spatial orientation and navigation, escape mechanisms, and animal communication will be examined, as well as the extraordinary sensory adaptation of organisms to their environments (e.g., echolocation, electroreception, and magnetic reception). The neural control of motor programs and temporally-patterned behaviors will be studied in simpler neuronal systems. Finally, recent cellular and molecular approaches to the study of behavior will be addressed. Three hours of lecture and one three-hour lab per week. Prerequisite(s): BIO 115, BIO 116 with a grade of C or better in each course.

Corequisite(s): BNS 375L.

BNS 375L Neuroethology Lab 0 Credits

This lab is a co-requisite and must be taken with the corresponding course.

Corequisite(s): BNS 375.

BNS 415 Seminar in Behavioral Neuroscience 3 Credits

Critical analysis of the scientific literature pertaining to current topics in behavioral neuroscience. Topics include mechanisms through which the brain influences physiology and behavior and the integration of nervous and endocrine systems. Three hours of lecture per week.

Prerequisite(s): BIO 115, BIO 116 or BNS 118, BIO 117, junior standing and permission of instructor.

BNS 490 Independent Study: Research and Creative Expression 1-4 Credits

Immerses the student in laboratory research. The student learns to organize material, use the literature, make precise measurements, and obtain reproducible data. If possible, the student will publish the results or present them at a scientific meeting.

BNS 491 Internship in Behavioral Neuroscience 1-4 Credits

A supervised work experience in an approved organization where qualified students gain real-world knowledge and utilize their academic training in a professional environment. Placement may be in private, public, non-profit, or governmental organizations. These can include educational or research institutions. The method of evaluation will be formalized prior to the approval of the internship by the sponsoring faculty and should include keeping a journal of activities, a term paper or project report and a poster presentation.

Prerequisite(s): 2.5 GPA and permission of the instructor.