

NEUROSCIENCE AND BEHAVIOR (NSB)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

NSB 400 - Topics Neuroscience & Behavior

Credits: 1

This seminar type course is designed as an introductory experience for incoming first-year students, although it may be taken by students transferring into the major. Topics covered will include sensory biology, learning and memory, homing and navigation, neuromodulators and stress, reproductive behaviors. The format will rely heavily on discussion, prompted either by assigned readings or presentations by program faculty on their areas of expertise.

Grade Mode: Credit/Fail Grading

NSB 500 - Fundamentals of Neuroscience and Behavior I

Credits: 3

The course will introduce students to the fundamental neural processes underlying behavior. It will begin with a detailed examination of the properties of individual neurons and then move on to demonstrate how neurons can communicate together to produce complex behaviors. Some of the basic concepts that will be covered will include: the molecular basis of electrical and chemical communication, sensory transduction and processing, neuropharmacology, the neural basis of reflexes and simple behavior, development of the nervous system and the influence of external stimuli on neural processing.

Co-requisite: NSB 501

Prerequisite(s): BIOL 411 with a minimum grade of C- and BIOL 412 with a minimum grade of D- and CHEM 403 with a minimum grade of D- and CHEM 404 with a minimum grade of D-.

Grade Mode: Letter Grading

NSB 501 - Fundamentals of Neuroscience and Behavior I Laboratory

Credits: 2

The course is designed to expose students to some of the classic experiments in cellular and molecular Neurobiology. They will record from sensory and motor neurons, stain and view neurons, carry out simple behavior experiments and record from muscles in freely behaving animals. The laboratory exercises will run parallel with the concepts taught in lecture and complement the lecture material in many ways. Students will conduct actual experiments, analyze the results and write lab reports as well.

Co-requisite: NSB 500

Prerequisite(s): BIOL 411 with a minimum grade of C- and BIOL 412 with a minimum grade of D- and CHEM 403 with a minimum grade of D- and CHEM 404 with a minimum grade of D-.

Grade Mode: Letter Grading

Special Fee: Yes

NSB 502 - Fundamentals of Neuroscience and Behavior II/Systems Neuroscience

Credits: 3

This course is an introduction to the questions addressed by scientists who aim to understand the biological basis of behavior and cognition. This semester we will review the major organization of the central nervous system and how these systems interact with each other to produce behavior and cognition. Major topics will include: the development and emergence of behavior; movement; the neural basis of cognition, and language, thought, affect and learning.

Co-requisite: NSB 503

Prerequisite(s): BIOL 411 with a minimum grade of D- and BIOL 412 with a minimum grade of D- and CHEM 403 with a minimum grade of D- and CHEM 404 with a minimum grade of D- and NSB 500 with a minimum grade of D- and NSB 501 with a minimum grade of D-.

Grade Mode: Letter Grading

NSB 503 - Fundamentals of Neuroscience and Behavior II Laboratory

Credits: 2

This laboratory class will complement the material being taught in NSB 502. The laboratory will focus on behavioral and cognitive neuroscience experiments. Students will learn about neuroanatomy and neuroscience research methods, including experimental design, data collection, statistical analysis, data interpretation, and manuscript preparation through conducting actual experiments. Students will write research reports describing their experiments and will receive some basic computer programming and research ethics training.

Co-requisite: NSB 502

Prerequisite(s): NSB 500 with a minimum grade of D- and NSB 501 with a minimum grade of D-.

Grade Mode: Letter Grading

Special Fee: Yes

NSB 600 - Field Experience in Neuroscience and Behavior

Credits: 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities relevant to neuroscience and behavior. Must be approved by a faculty advisor selected by the student.

Repeat Rule: May be repeated for a maximum of 8 credits.

Grade Mode: Credit/Fail Grading

NSB 705 - Molecular and Cellular Neurobiology

Credits: 4

The overarching goal of this course is to examine the molecular and cellular mechanisms underlying neuronal function. This course builds on fundamental knowledge in neuroscience. Students will be exposed to primary literature regarding how different model organisms have been used to understand neurons.

Prerequisite(s): BIOL 411 with a minimum grade of C- and BIOL 412 with a minimum grade of C- and CHEM 403 with a minimum grade of D- and CHEM 404 with a minimum grade of D- and NSB 500 with a minimum grade of C- and NSB 502 with a minimum grade of C-.

Grade Mode: Letter Grading

NSB 727 - Animal Communication

Credits: 4

This course examines the principles underlying how animals communicate with each other and why they communicate the way they do by using perspectives drawn from a broad range of disciplines including physics, chemistry, ecology, psychology, economics, and behavioral ecology. Students will explore the primary literature, and work in teams to conduct independent research. The course is intended for advanced undergraduate or graduate students interested in neuroscience and behavior, evolution, wildlife and conservation biology, or zoology.

Prerequisite(s): BIOL 412 with a minimum grade of D-.

Grade Mode: Letter Grading

NSB #728 - Research Methods in Animal Behavior

Credits: 4

This course provides hands-on experience with modern methods for studying animal behavior in the field and laboratory, and immersion in the primary literature. Animal behavior research projects will be complemented with a sequence of technical training sessions, the goals of which are to provide students with practical expertise in modern ethological techniques. The course takes a 'learn by doing' approach, with student research teams building relevant methodological proficiencies in the context of an investigation of their own design.

Prerequisite(s): BIOL 412 with a minimum grade of C- and ZOOL 613 (may be taken concurrently) with a minimum grade of D-.

Grade Mode: Letter Grading

Special Fee: Yes

NSB 795 - Special Investigations

Credits: 1-4

Independent research with any member of the NSB faculty in various areas including, but not limited to, neuroscience, neuroendocrinology, animal behavior.

Repeat Rule: May be repeated for a maximum of 8 credits.

Equivalent(s): NSB 795W

Grade Mode: Letter Grading

NSB 795W - Special Investigations

Credits: 1-4

Independent research with any member of the NSB faculty in various areas including but not limited to neuroscience, neuroendocrinology, animal behavior.

Attributes: Writing Intensive Course

Repeat Rule: May be repeated for a maximum of 8 credits.

Equivalent(s): NSB 795

Grade Mode: Letter Grading

NSB 798 - Capstone

Credits: 0

This is a 0 credit course to indicate on the transcript that capstone requirement is fulfilled.

Grade Mode: Credit/Fail Grading

NSB 799 - NSB Senior Thesis

Credits: 2-4

Working under the direction of a faculty sponsor, the student plans and executes independent research resulting in a written thesis and public presentation. Limited to students entering their senior year. A two-semester sequence 2-4 credits each semester. IA (continuous grading) given first semester.

Repeat Rule: May be repeated for a maximum of 8 credits.

Grade Mode: Letter Grading

NSB 799H - Honors Senior Thesis

Credits: 2-4

Working under the direction of a faculty sponsor, the student plans and executes independent research resulting in a written thesis and public presentation. Limited to student entering their senior year or under exceptional circumstances their junior year. Required for students working toward University Honors or Honors-in-Major. A two-semester sequence 2-4 credits each semester. IA (continuous grading) given first semester.

Attributes: Honors course; Writing Intensive Course

Repeat Rule: May be repeated for a maximum of 8 credits.

Grade Mode: Letter Grading