

# NEUROSCIENCE AND BEHAVIOR (NSB)

Neuroscience is one of the fastest-growing scientific fields, and the discoveries that are being made today are having an immediate and significant impact on our society. The importance of understanding animal behavior is likewise increasing, particularly in the face of a rapidly-changing environment. The B.S. in Neuroscience and Behavior is a great way for students to combine interests in neurobiology and animal behavior. The curriculum prepares students for various post-graduate degrees, including medical, veterinary, and graduate school, and we offer students a variety of opportunities to get hands-on research experience.

<https://colsa.unh.edu/biological-sciences>

## Programs

- [Animal Behavior Minor](#)
- [Neuroscience and Behavior Major \(B.S.\)](#)

## Courses

### Neuroscience and Behavior (NSB)

#### 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- or BIOL 411H with a minimum grade of D-) and (BIOL 412 with a minimum grade of D- or BIOL 412H 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- or BIOL 412H with a minimum grade of D-.

**Grade Mode:** Letter Grading

### **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

## Faculty

### **College of Liberal Arts Faculty**

<https://cola.unh.edu/psychology/faculty-staff-directory>

### **College of Life Sciences & Agriculture Faculty**

<https://colsa.unh.edu/biological-sciences/people>