NEUROSCIENCE (B.S.)

The field of neuroscience is highly interdisciplinary and has been built from many different areas of study. A well-rounded education in neuroscience includes investigations into the molecular, cellular, and genetic aspects of nervous system functioning as well as their influences on behavior. The neuroscience curriculum at Keene State mirrors the interdisciplinarity of the field. The core of the neuroscience major draws courses from biology, chemistry, and psychology. Students may also take elective courses from Computer Science, Health Science, Math, Philosophy, and Physics.

The major places a strong emphasis on direct research experience within neuroscience, with each student conducting a research project as part of the major. In addition, the neuroscience major creates an environment where faculty and students work collaboratively and discuss current issues in neuroscience.

The curriculum spans a diverse course of study incorporating the interdisciplinary nature of a liberal arts education and a rigorous study of subjects, such as:

- The regions of the brain
- Circuits in the brain
- The function of neurons
- · The effects and influences of the brain on behavior
- Research methodologies
- The molecular, cellular, and genetic characteristics of the nervous system.

Integrative Studies Requirements

40 credits

Code	Title	Credits	Completed	
Major Requirements (72 credits)				
Core Courses (36 Credits)				
INBIO-110	Cells and Molecules	4		
INBIO-111	Evolution & Ecology	4		
ISPSYC-101	General Psychology	4		
INCHEM-111	General Chemistry	4		
CHEM-112	Gen Chemistry II	4		
PSYC-252	Research Meth Psyc	4		
PSYC-253	Brain & Behavior	4		
BIO-312	Cell Biology	4		
MATH-141	Introductory Statistics	4		
or PSYC-251	Psychological Statistics			
Research Courses (8 Credits)		8		
PSYC-498	Independent Study (Must take Independent Study twice to total 8 credits)			

Capstone			
PSYC-475	Human Psychophysiology	4	
Foundation Cours	ses		
Select two of the	following:	8	
BIO-311	Genetics		
BIO-382	Neurobiology		
BIO-445	Animal Behavior		
PSYC-453	Sensation & Perception		
PSYC-457	Cognitive Neuroscience		
Related Science Courses:			
CHEM-221	Organic Chemistry I	4	
CHEM-222	Organic Chemistry II	4	
INPHYS-141	College Physics I	4	
or INPHYS-24	1 University Physics I		
Recommended Science Courses (Not Required)			
PHYS-142	College Physics II		
or PHYS-24	42University Physics II		
Elective Courses (4 Credits)		4	
Select one additional 200/300/400			
level course from one of the			
following disciplines (not including			
PSYC-298/498 o	r PSYC-470)		
Biology (BIO)	,		
Chemistry (CHEM)			
Computer Science (CS)			
Health Sciences (HLSC)			
Math (MATH)			
Philosophy (PHIL)			
Psychology (PSYC)			
Total Credits		72	

¹ Can be repeated as allowed

Electives

Select courses to reach a total of 120 credits.

Degree Requirements

120 credits

40 credits at the upper-level

Neuroscience Honors Program

Motivated neuroscience students may participate in an advanced program of research culminating in graduation with Honors in Neuroscience. This program allows students to pursue supervised research or applications of neuroscience principles in greater depth than provided in course offerings. Students electing to participate in this program complete all requirements for the Neuroscience BA or BS major plus 1 credit of PSYC-396 Junior Honors Seminar, 2 credits of#PSYC-496 Honors Seminar, and 6 credits of PSYC-499 Honors Research during the two semesters of the senior year. These credits are in addition to open elective credits used to fulfill the requirements for the Neuroscience major.

Admission to the Honors Program is based on:

- Self-nomination after the Fall Semester of the Junior year with an overall grade point average of 3.20.
- Completion of the core requirements of the Neuroscience major at the time of, or concurrent with, enrollment in PSYC-396 Junior Honors Seminar.
- Support of an Honors Committee consisting of a faculty sponsor and two other faculty members. The primary mentor must be from the department of psychology or a person on the list of Neuroscience affiliated faculty. The Honors Committee will review the student's project proposal at the completion of PSYC-396 Junior Honors Seminar.

At the end of the senior year, each participant:

- Submits a final written report on the Honors work for approval by their Honors Committee.
- Presents the results of their work and responds to questions about the project and its relationship to the larger body of neuroscience knowledge, in a colloquium open to the public.
- The student's Honors Committee votes on whether or not to accept the Honors project.
- Students successfully completing all facets of the Honors Program and having an average of 3.20 overall and 3.20 in courses for the neuroscience major will graduate with Honors in Neuroscience.

Upon completion of the Neuroscience B.S. degree, students will:

- Gain the theoretical background necessary for exploring the fundamental questions that neuroscience researchers in the fields of biology, chemistry and psychology ask when studying the brain.
- Develop familiarity with major theories and research methodologies that underlie current neuroscience research.
- Learn the major topics involved in an understanding of the neuroscientific foundations of human and animal behavior and how the central and peripheral nervous systems as well as the endocrine system relate to these behaviors.
- Be able to develop testable hypotheses, design experiments to test hypotheses and conduct experiments including data collection, analysis, interpretations and presentation. They will also be able to effectively search computer databases for relevant literature (primary and secondary) on scientific topics.
- Understand and be able to critically evaluate research literature in neuroscience.
- Engage in academic activities that support the important interdisciplinary connections in neuroscience research and theories.