Overview and Contact Information
The program in neuroscience and behavior is intended for students with strong, integrative interests in both biological sciences and psychology and in the biological bases of behavior.

See Also
• Cognitive Neuroscience (http://catalog.mtholyoke.edu/areas-study/cognitive-neuroscience)

Contact Information
Renae Brodie, Chair (Fall 2017)
Katherine Binder, Chair (Spring 2018)
Dianne Baranowski, Academic Department Coordinator
105 Clapp Laboratory
413-538-2611
https://www.mtholyoke.edu/acad/neuroscience

Faculty
This area of study is administered by the Neuroscience and Behavior Committee:
Katherine Binder, Professor of Psychology
Gary Gillis, Professor of Biological Sciences; Associate Dean of Faculty; Director of the Science Center
Sarah Bacon, Associate Professor of Biological Sciences
Renae Brodie, Associate Professor of Biological Sciences, Teaching Fall Only
Mara Breen, Assistant Professor of Psychology and Education
Kenneth Colodner, Assistant Professor of Neuroscience and Behavior
Kathryn McMenimen, Assistant Professor of Chemistry
Jared Schwartzter, Assistant Professor of Psychology and Education
Andre White, Assistant Professor of Biological Sciences

Requirements for the Major
A minimum of 52 credits:

Required Core Curriculum
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>NEURO-100</td>
<td>Introduction to Neuroscience and Behavior</td>
<td>4</td>
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<tr>
<td>CHEM-101</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM-201</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>CHEM-202</td>
<td>Organic Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH-101</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>PSYCH-204</td>
<td>Research Methods in Psychology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL-200</td>
<td>Introductory Biology II: How Organisms Develop</td>
<td>4</td>
</tr>
<tr>
<td>BIOL-333</td>
<td>Neurobiology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL-230</td>
<td>Cell and Molecular Biology</td>
<td>4</td>
</tr>
</tbody>
</table>

A course in quantitative inference: 4

PSYCH-201 Statistics or STAT-240 Elementary Data Analysis and Experimental Design or STAT-242 Intermediate Statistics

Two of the following laboratory-based courses at the 300 level: 8
BIOL-307 Vertebrate Anatomy
BIOL-315 Behavioral Ecology
BIOL-322 Comparative Biomechanics
BIOL-328 Human Physiology
BIOL-335 Mammalian Anatomy
BIOL-338 Evolution and Human Sexual Behavior
COMSC-334 Artificial Intelligence
COMSC-341NL Topics: ‘Natural Language Processing’
NEURO-324 Cellular and Molecular Neuroscience
NEURO-395 Independent Study (4 credits)
PSYCH-340CL Laboratory in Perception and Cognition: ‘Cognition and Literacy’
PSYCH-350 Laboratory in Behavioral Neuroscience
A third 300-level course from the preceding list, or from the following: 4
CHEM-212 Chemistry of Biomolecules
NEURO-330 Biology of Neurological Diseases
PSYCH-349AM Seminar in Perception and Cognition: ‘Art, Music, and the Brain’
PSYCH-349LT Seminar in Perception and Cognition: ‘Language and Thought’
PSYCH-359CN Seminar: Biological Bases of Behavior: ‘Clinical Neuroscience’

Total Credits 52

Additional Specifications
• Students planning postgraduate study in a related discipline or in medicine are urged to participate in independent laboratory research within either or both departments.
• Neuroscience and behavior is an interdisciplinary major. Students who pursue an interdisciplinary major automatically fulfill the College’s “outside the major” requirement.

Course Offerings
NEURO-100 Introduction to Neuroscience and Behavior
Fall and Spring. Credits: 4
This comprehensive survey course explores the brain and the biological basis of behavior. We will examine the anatomy of the nervous system and the unique properties of the cells that make up the brain. We will discuss the mechanisms by which individual brain cells communicate with each other, and how small networks of cells underlie more complex processes such as perception, learning, and behavior. In labs, students will perform experiments that expand upon and reinforce these ideas through hands-on exercises.
Applies to requirement(s): Math Sciences
K. Colodner
Restrictions: This course is limited to first-year students.
Coreq: NEURO-100L.

NEURO-295 Independent Study
Fall and Spring. Credits: 1 - 4
The department
Instructor permission required.
NEURO-324 Cellular and Molecular Neuroscience
Spring. Credits: 4
This course will explore cellular and molecular mechanisms of nervous system development and function through lectures, laboratory exercises, and the critical analysis of primary literature. Topics include synapse formation and synaptic transmission, neuronal-glial interactions, the molecular basis of behavior, and applied genetic engineering techniques.
Applies to requirement(s): Math Sciences
K. Colodner
Prereq: NEURO-100 and BIOL-230 (or BIOL-220).
Notes: This course meets the 300-level laboratory-based course requirement for the Neuroscience and Behavior major.

NEURO-330 Biology of Neurological Diseases
Not Scheduled for This Year. Credits: 4
Biology of Neurological Diseases will explore the molecular and cellular basis of neurological diseases. We will investigate the biological mechanisms underlying neurodegenerative diseases, such as Alzheimer's disease. We will focus on animal models used to investigate pathogenic mechanisms and the biology underlying therapeutic strategies. This class will rely heavily on primary research articles and in-class discussions.
Applies to requirement(s): Meets No Distribution Requirement
K. Colodner
Prereq: BIOL-210, BIOL-220 or BIOL-230, and PSYCH-250 or NEURO-100.

NEURO-395 Independent Study
Fall and Spring. Credits: 1 - 8
The department
Instructor permission required.