**Undergraduate Program in Neuroscience**

**Required Courses (17) & CAS Degree Courses (10)**

### ELECTIVES (5)

**Group 1: Cellular & Molecular**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>NE 230</td>
<td>NE 322*</td>
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<tr>
<td>NE 455</td>
<td>NE 445</td>
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<td>NE 481</td>
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<td>NE 520</td>
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<td>NE 525#</td>
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<td>NE 535</td>
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<td>BI 599</td>
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**Group 2: Cognitive**

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<tr>
<td>NE 327#</td>
<td>PS 222*</td>
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<td>NE 328</td>
<td>NE 234*</td>
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<td>NE 529</td>
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**Group 3: Computational**

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<tr>
<td>NE 360/HS 361*</td>
<td>NE 340*</td>
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<td>NE 449</td>
<td>NE 530</td>
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<tr>
<td>MA 421**</td>
<td>MA 578</td>
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<tr>
<td>MA 565#</td>
<td>CS 542</td>
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<tr>
<td>CN 500*</td>
<td>CN 510</td>
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<td>CN 520</td>
<td>CN 530-580</td>
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<td>CS 565</td>
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**Restricted (Maximum 2)**

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<tr>
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<td>CH 203</td>
<td>MA 242#</td>
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<tr>
<td>MA 416</td>
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<td>CS 111#</td>
<td>CS 112#</td>
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<td>ENG EK 127**</td>
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### CORE NEUROSCIENCE COURSES (5)

**Fall**

- NE 101 Introduction to Neuroscience
- NE 203* Principles of Neuroscience

**Spring**

- NE 102* Intro to Cell & Molecular Neurobiology
- NE 202 Intro to Cognitive Neuroscience
- NE 204* Intro to Comp Models of Brain & Behavior

### BASIC SCIENCE COURSES (7)

- **Chemistry:** CH 101 (or equivalent) CH 102 (or equivalent)
- **Physics:** PY 105 (or equivalent) PY 106 (or equivalent)
- **Calculus:** MA 123 (or equivalent) MA 124 (or equivalent)
- **Statistics:** NE 212 (or equivalent)

See reverse side for equivalent courses

### CAS DEGREE COURSES (10)

**Writing Requirement:**

WR 100 ______ WR 150 ______

**Foreign Language Requirement:**

Language 1 ______ Language 2 ______
Language 3 ______ Language 4 ______

**General Education Divisional Requirement:**

HU 1 ______ HU 2 ______
SS 1 ______ SS 2 ______

**Credit Requirements:** CAS requires a minimum of 128 credits, excluding PDP, ROTC, CAS FY and SY courses.

### RESEARCH REQUIREMENT

Successful completion of **NE 102 and NE 203**

-OR-

Successful completion of an upper-level lab course (may be satisfied with a restricted elective)

-OR-

Successful completion of at least two consecutive semesters of research during Junior or Senior year; in this instance only four electives will be required.

NE 391 ______ NE 491______
NE 392 ______ NE 492______
NE 401/402 _____ (Senior Thesis)

### OTHER REQUIREMENTS

1. Credit may **NOT** be received for both NE 101 & PS 231.
2. A C or higher must be achieved in all 17 major courses.
3. Credit may not be received for both AP Chemistry and CH 101/102 or CH 109/110
4. 128 credits are required to graduate from CAS

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*Lab Course  ** Summer Term  # Offered either semester

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1. Breadth Requirement: All five electives may not be from the same group. Restricted electives do not satisfy the breadth requirement. For example, four courses from Group 1 and one course from the restricted list will not satisfy the requirement.

2. Restricted List: Up to two electives may come from the Restricted list (neither satisfies the Breadth or Research Requirement).

3. Students may not count both NE 337 & NE 338 toward their electives.

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Name: ___________________  BU ID: ___________________

Restricted electives may not be counted toward the breadth requirement. A C or better must be achieved in all 17 major courses.

Restricted electives may not be counted toward the breadth requirement. A C or better must be achieved in all 17 major courses. Additionally, students may not count both NE 337 & NE 338 toward their electives.
# Undergraduate Program in Neuroscience

## Course List

### Group 1 Electives: Cellular & Molecular

- NE 230 Behavioral Endocrinology
- NE 322* Experimental Psych: Physiology
- NE 445* Cell & Molec Neurophysiology
- NE 455 Developmental Neurobiology
- NE 481 Molecular Biology of the Neuron
- NE 520 Sensory Neurobiology
- NE 525# Neurodegenerative Disorders
- NE 535 Translational Research in Alzheimer’s Disease
- NE 542 Neuroethology
- NE 545 Neurobiology of Motivated Behavior
- NE 554 Neuroendocrinology
- BI 594 Topics in Neurobiology
- BI 599 Neurobiology of Synapses

### Group 2 Electives: Cognitive

- PS 222 Perception
- NE 234 Psychology of Learning
- NE 323# Experimental Psych: Learning
- NE 327 Experimental Psych: Perception
- NE 328 Experimental Psych: Memory
- NE 333 Drugs and Behavior
- NE 337 Memory Systems
- NE 338 Neuropsychology
- NE 499 Clinical Neuroanatomy
- NE 521 Animal Models of Behavioral Neuroscience
- NE 528 Brain Mapping
- NE 529 Neuroplasticity
- NE 544 Developmental Neuropsych

### Group 3: Computational

- NE 340* Comp Models of Skilled Action
- NE 360/HS 361* Models of Hearing & Language
- MA 421 Modern Stat Modeling & Data Analysis
- NE 449* Neuroscience Design Lab
- CN 500* Techniques in Modeling
- CN 510 Cognition & Neural Models I
- CN 520 Cognition & Neural Models II
- CN 530-580 Intro to Comp. Neuro.
- MA 545 Machine Learning
- MA 566 Data Mining
- MA 578 Bayesian Statistics

### Restricted

- MA 226 Differential Equations
- MA 242 Linear Algebra
- BI 315 Systems Algebra
- MA 416 Intermediate Stats

### Basic Science Equivalents

**Chemistry:**
- CH 101/102 General Chemistry I/II
- CH 109/110 Quantitative Analytical Chem I/II
- CH 111/112 Intensive General & Quantitative Analytical Chemistry I/II

**Statistics:**
- NE 212 Introduction to MATLAB Programming
- MA 115/116 Statistics I/II
- MA 213/214 Basic Stats & Prob/Applied Stats

**Physics:**
- PY 105/106 Elementary Physics I/II
- PY 211/212 General Physics I/II
- PY 241/242 Principles of General Physics I/II
- PY 251/252 Principles of Physics I/II

**Calculus:**
- MA 121/122 Calculus for the Life Sciences I/II
- MA 123/124 Calculus I/II
- MA 125/126 Calculus II/III

### Pre-med Requirements

- One year of Biology with lab (for neuro majors, this is satisfied by NE 102 & BI 315; BI 108 is required)
- One year of General Chemistry
- One year of Physics
- One year of Writing
- One year of Calculus
- One year of Statistics
- One year of Organic Chemistry
- One year of Biochemistry
- One introductory course in Psychology
- One introductory course in Sociology

### Proposed Course of Study

<table>
<thead>
<tr>
<th>First Year</th>
<th>Second Year</th>
<th>Third Year</th>
<th>Fourth Year</th>
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<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
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This course list is designed to provide a comprehensive overview of the neuroscience program, covering a wide range of electives and core courses necessary for understanding the field. The basic science equivalences listed are essential for students transitioning into neuroscience courses, ensuring a solid foundation in chemistry, physics, and mathematics. The pre-med requirements are detailed to guide students who are planning to pursue a career in medicine or related fields, highlighting the importance of a strong background in biology, chemistry, and other sciences. The proposed course of study provides a structured timeline for academic planning, with clear designations for each semester, facilitating a smooth progression through the program.