

## NEUROSCIENCE MAJOR CURRICULUM PLAN

As outlined below, the Neuroscience major consists of the following components: 1) foundation courses in the natural sciences; 2) math and statistics coursework; 3) life science fundamentals; 4) a core neuroscience sequence; 5) upper-division elective courses; and 6) advanced skills courses and/or research experience. The total number of credits is 104-107 (depending on whether majors complete the General Biology Sequence or the Biology Honors Sequence).

### **Foundation courses in natural sciences** (46-49 credits)

- General Biology Sequence: BI 211, 212, and 214 (12 credits) OR Biology Honors Sequence: BI 281H, 282H, 283H (15 credits)
- General Chemistry Sequence: CH 221, 222, 223 OR Chemistry Honors Sequence: CH 224H, 225H, 226H (12 credits)
- Introductory Physics Sequence: PHYS 201, 202, 203 OR Foundations of Physics Sequence: PHYS 251, 252, 253 (12 credits)
- General Chemistry Laboratory: CH 227, 228, 229 OR General Physics Laboratory: PHYS 204, 205, 206 (6 credits)
- Mind & Brain: PSY 201 (4 credits)

### **Math and statistics courses** (8 credits)

- MATH 246 or 251
- PSY 302 Statistical Methods in Psychology OR MATH 425 Statistical Methods I OR ANTH 470 Statistical Analysis of Biological Anthropology

### **Life science fundamentals** (8 credits)

- HPHY 211 Medical Terminology
- HPHY 212 Scientific Investigations in Physiology

### **Core neuroscience sequence** (18 credits; recommended, but not required, to be taken in this order)

- HPHY 321 Human Anatomy I & HPHY 322 Human Physiology I (Fall)
- PSY 304 Biopsychology (Winter)
- BI 360 Neurobiology (Spring)

**Upper-division elective courses** (16 required credits with at least 12 credits from 400-level courses; at least one course from each of the three areas)

### **Molecular/Cellular/Developmental**

- BI 320 Molecular Genetics
- BI 322 Cell Biology
- BI 328 Developmental Biology
- BI 356 Animal Physiology
- BI 410 Neurogenetics
- BI 422 Protein Toxins in Cell Biology
- BI 427 Molecular Genetics of Human Disease
- BI 463 Cellular Neuroscience
- BI 466 Developmental Neurobiology
- HPHY 337 Clinical Pharmacology
- HPHY 432 Neural Development

## **Systems**

- BI 353 Sensory Physiology
- BI 399 Visual System
- BI 410 Auditory Systems
- BI 461 Systems Neuroscience
- HPHY 333 Motor Control
- HPHY 412 Sleep Physiology
- HPHY 433 Neurophysiology of Concussion
- HPHY 434 Movement Disorders
- HPHY 436 Clinical Neuroscience
- PSY 445 Brain Mechanisms of Behavior
- PSY 450 Hormones & Behavior

## **Cognitive**

- BI 410 Neural Basis of Cognition
- PSY 305 Cognition
- PSY 348 Music & the Brain
- PSY 383 Psychoactive Drugs
- PSY 433 Learning & Memory
- PSY 436 Human Performance
- PSY 438 Perception
- PSY 440 Psycholinguistics
- PSY 449 Cognitive Neuroscience
- PSY 458 Decision Making
- PSY 475 Cognitive Development

## **Advanced skills courses and research experience** (8 required credits)

- BI 401 Research, BI 403 Thesis, BI 407 Seminar, BI 410 Introduction to Programming for Biologists, BI 410 Matlab for Biologists, BI 410 Analysis Neural Data, BI 485 Techniques in Computational Neuroscience, CIS 372M Machine Learning for Data Science, CIS 472 Machine Learning, HPHY 401 Research, HPHY 403 Thesis, PSY 401 Research, PSY 403 Thesis, PSY 412 Applied Data Analysis

## **Criteria for Honors**

To graduate with Honors in Neuroscience, the following requirements must be met:

1. A completed Neuroscience Honors application with signature of a faculty research advisor from BI, HPHY or PSY
2. Completion of all Neuroscience major requirements
3. A minimum 3.5 GPA in all courses applied to the major
4. At least three credits in BI 403, HPHY 403, or PSY 403 Thesis (*These credits may be applied to the advanced skills courses and research experience requirement*).
5. Completion of an honors thesis under supervision of a committee, consisting of one BI, HPHY, or PSY faculty member and at least one other committee member from BI, HPHY, or PSY.