2022-2023 Neuroscience Major Checklist

All courses counted towards the Neuroscience major requirements must be taken for a letter grade (when offered) and passed with a grade of C or better.

**Foundation courses in natural sciences**

General Biology Sequence:  BI 211 ______  BI 212 ______  and BI 214 ______
  *Prerequisite for BI 211: CH 111 or CH 221*  
  OR Biology Honors Sequence:  BI 281H, BI 282H, and BI 283H

General Chemistry Sequence:  CH 221 ______  CH 222 ______  and CH 223 ______
  *Prerequisites for CH 221: CH 111 or satisfactory placement score and MATH 111*
  OR Chemistry Honors Sequence:  CH 224H, CH 225H, and CH 226H

Introductory Physics Sequence:  PHYS 201 ______  PHYS 202 ______  PHYS 203 ______
  *Prerequisite for PHYS 201: MATH 112 or equivalent*  
  OR Foundations of Physics Sequence:  PHYS 251, PHYS 252, and PHYS 253

General Chemistry Laboratory:  CH 227 ______  CH 228 ______  CH 229 ______
  OR General Physics Laboratory:  PHYS 204 ______  PHYS 205 ______  PHYS 206 ______

Mind & Brain:  PSY 201 ______

**Life science fundamentals**

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

**Math and statistics courses**

MATH 246 Calculus for the Biological Sciences I ______  (MATH 251 may be substituted)
  *Prerequisite: MATH 112 or satisfactory placement test score*

PSY 302 Statistical Methods in Psychology ______  (MATH 425 or ANTH 470 may be substituted)
  *Prerequisites: PSY 201, HPHY 212, MATH 246 or 251*

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

HPHY 321 Human Anatomy I ______  AND  HPHY 322 Human Physiology I ______
  *Prerequisites: HPHY 211, BI 211, BI 212, General Chemistry Sequence, MATH 246 or 251*

PSY 304 Biopsychology ______  BI 360 Neurobiology ______
  *Prerequisite: PSY 201  Prerequisite: BI 214*

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

Molecular/Cellular/Developmental ______  Systems ______  Cognitive ______

Elective ______  (at least 3 courses at 400-level ______)

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

_______ cr: ______  ________ cr: ______  ________ cr: ______  ________ cr: ______  ________ cr: ______
Upper-Division Neuroscience Elective Courses
Upper-division elective courses should be taken after completing the foundation courses, life science fundamentals, math and statistics courses, and the core neuroscience sequence.

### Molecular/Cellular/Developmental
- BI 320 Molecular Genetics
- BI 322 Cell Biology
- BI 328 Developmental Biology
- BI 356 Animal Physiology
- BI 410 Autism & Neurodevelopmental Disorders
- 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 432 Neural Development

### Systems
- BI 353 Sensory Physiology
- BI 399 Visual System
- BI 410 Auditory Systems
- BI 410 Neurobiology of Motivation & Addiction
- 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 399 The Science & Culture of Sleep
- 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 and Research Experience Courses
Advanced skills courses should be taken after completing math and statistics courses and the core neuroscience sequence. Research experiences can be started at any time, and earlier is usually better!

- BI 399L Intro to Python for Biologists
- BI 401/HPHY 401/PSY 401 Research
- BI 403/HPHY 403/PSY 403 Thesis
- BI 407 Neuroscience Seminar
- BI 410 Introduction to Programming for Biologists
- BI 410 Matlab for Biologists
- BI 410 Analysis Neural Data
- BI 410 Data Visualization
- BI 485 Techniques in Computational Neuroscience
- BIOE 410 Synthetic Biology
- CS 372M Machine Learning for Data Science
- CS 472 Machine Learning
- MATH 410 Machine Learning Statistics
- PSY 412 Applied Data Analysis