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: _____

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