B.S. IN NEUROSCIENCE

The neuroscience major is multidisciplinary, combining expertise across a variety of fields. It adopts an integrative approach early in the curriculum to provide students with a conceptual framework for understanding the neuroscientific implications of the biology, psychology, chemistry, mathematics, computer science, and physics courses that are required. At the upper levels, it provides in-depth lab experiences, individual research opportunities, and senior capstone courses to tie it all together and to prepare graduates to succeed in a graduate program or to enter the field in some professional capacity.

### Code | Title | Credits
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**Major in Neuroscience (B.S.)**
**Neuroscience Core:**
BIO/PSY/NSC 130 | Introduction to Neuroscience | 3
BIO/PSY/NSC 130D | Introduction to Neuroscience Lab | 1
BIO 358 & BIO 359 | Neurobiology and Neurobiology Lab | 4
PSY 340 & PSY 341 | Physiological Psychology and Psychological Psychology Lab | 4
CHE 224 & CHE 225 | Organic Chemistry I and Organic Chemistry I Lab | 4
NSC 350 & NSC 351 | Neuroscience Methods and Neuroscience Methods Lab | 4
NSC 493 | Literature Review in Neuroscience | 1
NSC 496 | Neuroscience Research | 1
NSC 499 | Neuroscience Seminar | 1
**Fundamentals of Psychology Courses:**
PSY 100 | Introduction to Psychology | 3
PSY 230M | Introduction to Statistical Methods and Experimental Design | 4
**Fundamentals of Biology Courses**
BIO 124 & BIO 124D | Integrative Biology: Genes, Cells, Change and Integrative Biology: Genes, Cells, Change Lab | 4
BIO 128 & BIO 128D | Metabolism, Energy, Biodiversity and Integrative Biology: Metabolism, Energy, Biodiversity Lab | 4

**Choose a Chemistry Sequence:**
CHE 113 General Chemistry I & CHE 113D General Chemistry I Lab | 113D
CHE 214 General Chemistry II & CHE 215 General Chemistry II Lab | 215

**Choose one or both Mathematics courses:**
MAT 124M | Calculus 1 | 1
MAT 125 | Calculus 2 | 1

**Choose two courses from Biology and Biochemistry courses, at least one of which must be 300-level or above:**
BIO 214 Human Anatomy & BIO 215 Human Anatomy Lab | 215
BIO 216 Human Physiology & BIO 217 Human Physiology Lab | 217
BIO 238 Human Anatomy and Physiology & BIO 239 Human Anatomy and Physiology Lab | 239
BIO 332 Genetics & BIO 333 Genetics Lab | 333
BIO 338 Endocrinology & BIO 339 Endocrinology Lab | 339
BIO 346 Animal Behavior & BIO 347 Animal Behavior Lab | 347
BIO 354 Cell Biology & BIO 355 Cell Biology Lab | 355
BIO 362 Developmental Biology | 362
BIO 376 Animal Physiology | 376
Choose one Experimental Psychology course: 4

PSY 323 Motivation and Emotion
PSY 348 Conditioning and Learning & PSY 349 Learning Lab
PSY 350 Cognitive Psychology
PSY 440 Sensation and Perception & PSY 441 Perception Lab

Choose one Computer Science course: 3-4

COS 100 Introduction to Programming
COS 105 Computer Science 1
COS 205 Scientific Computing
COS/PSY 337K Behavioral Robotics

Choose one Physics sequence: 8

PHY 202 Introductory Physics I & PHY 202D
PHY 206 Introductory Physics II & PHY 207

Or

PHY 292 General Physics I & PHY 292D
PHY 296 General Physics II & PHY 297

Electives 0-4

Total Credits 122-127

1 Required if student chooses the PHY 292/PHY 296 option or the COS 105 option.
2 This is a designated research course. Courses whose number is followed by a letter fulfill a General Education requirement.

NSC 130 • Introduction to Neuroscience 3 Credits.
An introduction to the biological basis of behavior. Focuses on two main themes: the cellular, molecular, and genetic processes that form the foundation of nervous system function and the systems-level organization of the nervous system that forms the foundation of human and animal behavior.
Corequisites: Concurrent registration in NSC 130D is required. Offered: Spring. Special Notes: Carries cross-credit in Biology and Psychology.

NSC 130D • Intro to Neuroscience Lab 1 Credit.
Laboratory experience accompanying NSC 130. Corequisites: Concurrent registration in NSC 130 is required. Offered: Spring. Special Notes: Carries cross-credit in Biology and Psychology.

NSC 350 • Neuroscience Methods 3 Credits.
Principles and practice of neuroscience laboratory techniques. Laboratory and lecture experience are integrated to include introduction of histological, molecular, electrophysiological and computer-based neuroscience research. Collection of qualitative and quantitative data and data analysis.
Prerequisites: BIO 120/BIO 120D and BIO 124/BIO 124D or BIO 130/PSY 130/NSC 130; PSY 230M.
Corequisites: Concurrent registration in NSC 351 is required. Offered: Spring, even # years.

NSC 351 • Neuroscience Methods Lab 1 Credit.
Lab experience accompanying NSC 350. Corequisites: Concurrent registration in NSC 350 is required. Offered: Spring, even # years.
NSC 358 • Neurobiology 3 Credits.
Nervous system of animals and humans. Includes comparative anatomy and physiology of humans with other vertebrates and invertebrates, as well as interactions of sensory, motor, and integrative mechanisms of nervous system control.
Prerequisites: BIO 120/120D or two of the following: BIO 124/BIO 124D, BIO 128/BIO 128D, BIO 130/NSC 130, BIO 122/122D. Corequisites: Registration in NSC 359 is required. Offered: Fall, even # years.

NSC 359 • Neurobiology Lab 1 Credit.
Laboratory experience accompanying BIO 358. Corequisites: Registration in NSC 358 is required. Offered: Fall, even # years.

NSC 493 • Literature Review in Neuroscience 1 Credit.
Survey of contemporary and classical neuroscience literature. Journal club format in which topics of the students' choosing are researched, discussed, and methodologies assessed. Students will evaluate a variety of neuroscience research through a written summary.
Prerequisites: Declared Neuroscience major, Junior standing. Offered: Spring.

NSC 496 • Neuroscience Research 1 Credit.
Students collect original data through independent laboratory/field research under the supervision of a neuroscience faculty member. Data are analyzed and conclusions drawn and reported.
Prerequisites: BIO/PSY 130; BIO/PSY 130D; Consent of instructor. Offered: Fall.

NSC 499 • Neuroscience Seminar 1 Credit.
Readings and discussion of topics that relate neuroscience to one's Christian faith as well as moral, ethical, and societal issues. Topics may include the following examples: psychopharmacological enhancement of attention, memory, and mood; brain implants and "homo augmentus"; free will, the soul, responsibility, and personhood; definition of mental health and illness.
Prerequisites: Declared neuroscience major, Senior standing. Offered: Fall, Spring.