

# Bachelors of Science in Neuroscience for 2019-20 Academic Year

## Program Description

Neuroscience is an interdisciplinary program that prepares students to developing an understanding of the brain at a cellular and behavioral level using knowledge and skills gleaned primarily from the fields of Biology, Psychology, and Chemistry. Students develop statistical and laboratory skills which are applied in a capstone experience in the field. The Neuroscience program prepares students for work in biological and clinical laboratory settings and for graduate work in Neuroscience and related fields including Neurology, Neuropsychology, Psychology, Cognitive Science, and Medicine.

## B.S. in Neuroscience (64 credits)

### Foundational courses (16 credits)

- NEU 125 Introduction to Neuroscience (4 cr.)
- PSY 105 Introduction to Psychology (4 cr.)
- BIO 111 Molecules, Cells, and Animal Systems with lab (4 cr.)
- CHEM 105 Fundamentals of Chemistry: Introduction to Molecular Science with lab (4 cr.)

### Methodological courses (8 credits)

- PSY 280 Psychological Statistics (4 cr.)
- PSY 285 Psychological Research Methods (4 cr.)

### Breadth courses (15-16 credits)

- BIO 211 Genetics, lab required (pre-requisite BIO 111) (4 cr.)
- BIO 212 Cell Biology, lab optional (pre-requisite BIO 211) (3 or 4 cr.)
- PSY 210 Sensation and Perception (pre-requisite PSY 105) (4 cr.)
- PSY 315 Cognitive Psychology (pre-requisite PSY 105 and junior status) (4 cr.) or CSC 315
- Cognitive Neuroscience: Neurons to Networks (4 cr.)

### Advanced courses in Neuroscience (8 credits)

- NEU 320 Behavioral Neuroscience, lab required (pre-requisite NEU 125 and junior status) (4 cr.)
- NEU 325 Neuroscience of Drug Abuse (pre-requisite NEU 125 and junior status) (4 cr.)

### Capstone in Neuroscience (4 credits)

Students must complete 4 credits via one of the following courses.

- NEU 475 Internship in Neuroscience
- PSY 485 Advanced Psychological Research
- NEU 490 Research Practicum

### Elective courses (12 credits)

Students must complete 12 credits among all listed electives. Electives need not be from a single emphasis category, though this may be advisable. Students who want to pursue additional electives are encouraged to consider a minor in Biology, Biochemistry, Psychology, or Cognitive Science.

### Cellular/Molecular Emphasis

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- BIO 310 Molecular Biology, lab optional (pre-requisite BIO 111) (3 or 4 cr.)
- BIO 311 Experimental Design in Cell Biology (15 credits in BIO including BIO 212 with lab
- plus two semesters of CHEM) (4 cr.)
- BIO 324 General Physiology, lab optional (3 or 4 cr.)
- BIO 328 Behavioral Endocrinology (pre-requisite BIO 111, BIO 211) (3 cr.)
- CHEM 113 Organic Chemistry I, lab required (4 cr.)
- CHEM 323 Biochemistry 1 (pre-requisite BIO 111, CHEM 113, and another BIO/CHEM course at 200-level) (3 cr.)

### **Behavioral Emphasis**

- PSY 220 Health Psychology (4 cr.) (pre-requisite PSY 105)
- PSY 250 Psychopathology (4 cr.) (pre-requisite PSY 105)
- PSY 255 Psychotherapy and Assessment (4 cr.) (pre-requisite PSY 105)
- PSY 310 Intelligence and Creativity (pre-requisite PSY 105 and junior status) (4 cr.)
- PSY 315 Cognitive Psychology (pre-requisite PSY 105 and junior status) (4 cr.)
- PSY 360 Psychology of Stress (pre-requisite PSY 105 and junior status) (4 cr.)

### **Computational Emphasis**

- CS 113 The Power and Beauty of Computing (4 cr.) or CS 121 Computer Programming I (4 cr.)
- CS 434 Green Robotics, Automation, and Machine Intelligence (pre-requisite CS 121, MA 121) (4 cr.)
- DS 200 Introduction to Data Science (pre-requisites CS 122, MA 121) (4 cr.)
- CSC 315 Cognitive Neuroscience: Neurons to Networks (4 cr.)