

Neuroscience, PhD

Requirements

The Doctor of Philosophy program in neuroscience requires a minimum of 72 s.h. of graduate credit. Students must maintain a cumulative grade-point average of 3.00. The program's curriculum is designed around three tracks: molecular/cellular, developmental/systems, and cognitive/behavioral. Following broad-based instruction in a core curriculum, students specialize in one of the tracks.

Within a framework of core, track-specific, and elective courses, students pursue a program of study individually designed according to their undergraduate training and graduate research goals. After enrolling in the neuroscience program, entering students consult with the advisory committee regarding their level of preparation for the program's required courses.

The Student Advisory Committee meets with all first- and second-year graduate students once each semester, helping students explore their research interests and select faculty mentors for the required laboratory rotations. Each student is expected to complete three rotations in faculty laboratories before selecting a thesis advisor. Rotations ordinarily last 12 weeks but may last from 8 to 16 weeks. Under special circumstances, two rotations may be in the same laboratory, an arrangement that permits a student to learn a variety of techniques and approaches before settling down to work on the dissertation project. Students usually choose a dissertation lab at the end of their first year.

Background Requirements

Successful students will have demonstrated preparedness for graduate training in neuroscience by completing a bachelor's degree and substantive prior research experience in one or more of the following areas: biochemistry, general physiology, cell biology, and statistics. Didactic coursework in quantitative methods, statistics, and/or computer programming is also beneficial.

Neuroscience Core

The following courses form the core of the neuroscience graduate curriculum.

| Course # | Title | Hours |
|-----------------------|---|-------|
| NSCI:5653 | Fundamental Neurobiology I | 3 |
| NSCI:7235 | Neurobiology of Disease | 3 |
| ACB:6252 | Functional Neuroanatomy | arr. |
| BMED:7270 | Scholarly Integrity/ Responsible Conduct of Research I | 0 |
| BMED:7271 | Scholarly Integrity/ Responsible Conduct of Research II | 0 |
| PSY:6370 | Principles of Neuropsychology | 3 |
| One statistics course | | 3-4 |

In addition, students register for the following two courses each semester:

| | | |
|-----------|-----------------------|------|
| NSCI:6265 | Neuroscience Seminar | 0-1 |
| NSCI:7305 | Neuroscience Research | arr. |

Electives

Elective requirements may be met by completing 8 s.h. from a list of courses offered by the departments of Anatomy and Cell Biology, Biology, Molecular Physiology and Biophysics, Neuroscience and Pharmacology, Psychological and Brain Sciences, and other departments as appropriate. With permission of the Student Advisory Committee, students may satisfy the elective requirement wholly or in part by registration in the following courses.

| Course # | Title | Hours |
|-----------|---|-------|
| NSCI:5212 | Foundations in Behavioral and Cognitive Neuroscience | 4 |
| NSCI:5365 | Seminar: Neuropsychology and Neuroscience | arr. |
| BIOL:3343 | Animal Physiology | 3 |
| BIOL:4213 | Bioinformatics | 2,4 |
| BMED:5207 | Principles of Molecular and Cellular Biology | 3 |
| CSD:5234 | Acquired Cognitive- Communication Disorders | arr. |
| CSD:6230 | Psychoacoustics | 2-3 |
| GENE:6200 | Current Topics in Genetics | 1 |
| HHP:6300 | Motor Control Seminar | 1 |
| MATH:5750 | Mathematical Biology I | 3 |
| MMED:6220 | Mechanisms of Cellular Organization | 3 |
| MMED:6226 | Cell Cycle Control | 1 |
| MMED:6227 | Cell Fate Decisions | 1 |
| PCOL:5135 | Principles of Pharmacology | 1 |
| PCOL:5137 | Neurotransmitters | 1 |
| PCOL:6207 | Ion Channel Pharmacology | 1 |
| PCOL:6225 | Growth Factor Receptor Signaling | 1 |
| PSY:3320 | Psychopathology | 3 |
| PSY:5070 | Programming for Psychologists | 3 |
| PSY:5080 | Foundations in Cognitive Neuroscience | 4 |
| PSY:5610 | Proseminar in Cognition and Perception | 3 |
| PSY:6440 | Developmental Cognitive Neuroscience | 3 |
| PSY:7150 | Current Topics in Psychology | 3 |
| PSY:7210 | Seminar: Advanced Topics in Behavioral and Cognitive Neuroscience | 3 |
| RHET:7500 | Science Communication in the Digital Age | 2-3 |
| STAT:6300 | Probability and Stochastic Processes I | 3 |