

# NEUROSCIENCE (CONCENTRATION)

## Neuroscience Concentration

Neuroscience Concentration requires students to complete the ten 4-credit courses listed below, and the zero-credit NEUR 401 - Neuroscience Assessment.

### Four Foundational Courses in Biology and Psychology

Students may begin these courses as early as the first semester at Denison. It is recommended that they be completed in the first 2 years, as they are prerequisites for other courses in the concentration. Note that the two biology courses must be taken in order; both courses are offered all semesters. Likewise, the two psychology courses must be taken in order; both courses are offered all semesters.

Code	Title
BIOL 210	Molecular Biology and Unicellular Life
BIOL 220	Multicellular Life
PSYC 100	Introduction to Psychology
PSYC 200	Research Methods and Statistics

### One Upper-Level Neuroscience Seminar

Note this course is offered once a year and can be taken anytime after prerequisites are completed. In this course students will delve into current research topics from across the field of neuroscience by reading and discussing recent scientific literature.

NEUR 312 - Current Topics in Neuroscience (Bio 210, 220, Psych 100, 100 are prerequisites)

### One Computational Course

Because computational modeling, computational research methods, and analyses of large datasets are fundamental aspects of modern neuroscience, students must take either an introductory Computer Science or Data Analytics course as part of the concentration. **We recommend CS 111 - Discovering Computer Science: Scientific Data and Dynamics or DA 101 - Introduction to Data Analytics**, but other introductory CS courses will also fulfill the requirement. These courses are offered frequently; this requirement can be fulfilled at any time.

Code	Title
CS 111	Discovering Computer Science: Scientific Data and Dynamics
or DA 101	Introduction to Data Analytics
or CS 109	Discovering Computer Science
or CS 112	Discovering Computer Science: Markets, Polls, and Social Networks

### One Philosophy Course Related to Neuroscience

Neuroscience is an interdisciplinary field that seeks to interrogate how humans (and other animals) perceive, think, and behave. The ideas neuroscientists wrestle with therefore overlap with the work of philosophers, and philosophy can inform the work of neuroscientists. Students will take one philosophy course as part of the concentration. This requirement can be fulfilled at any time. These courses are offered periodically and it is recommended that students check offerings with the

philosophy department. Note that PHIL 210 - Philosophy of Science has no prerequisites when taken by a junior or senior science major; similarly, PHIL 280 - Philosophy of Mind has no prerequisites for neuroscience concentrators, and PHIL 285 - Biomedical Ethics has no prerequisites.

Code	Title
PHIL 210	Philosophy of Science
or PHIL 280	Philosophy of Mind
or PHIL 285	Biomedical Ethics

### Three Advanced Courses in Biology and Psychology

These courses may be taken in any order, except that PSYC 350 - Biological Psychology and PSYC 351 - Research in Biological Psychology must be taken concurrently. BIOL 349 - Neurophysiology is recommended over BIOL 334 - Comparative Physiology: Human and non-human animals, but BIOL 349 - Neurophysiology is typically offered every other year, so BIOL 334 - Comparative Physiology: Human and non-human animals is an alternative if needed for scheduling. PSYC 350 - Biological Psychology/PSYC 351 - Research in Biological Psychology is typically offered every year. Note that all of these courses have prerequisites, but they are fulfilled by the foundational courses in the concentration.

Code	Title
BIOL 349	Neurophysiology
or BIOL 334	Comparative Physiology: Human and non-human animals
PSYC 350	Biological Psychology
PSYC 351	Research in Biological Psychology

(In place of PSYC 351, students may take one of the following course pairings: PSYC 310 & PSYC 311, PSYC 330 & PSYC 331, PSYC 340 & PSYC 341. Note that PSYC 350 is still required, and thus this substitution increases the total number of courses for the concentration by one.)

### Neuroscience Assessment

Satisfactory completion of NEUR 401 - Neuroscience Assessment is required of all senior Neuroscience concentrators during the semester prior to graduation. NEUR 401 - Neuroscience Assessment is a zero credit course graded S/U.