

Graduate Certificate: Neuroscience

COLLEGE OF LIBERAL ARTS (<https://liberalarts.temple.edu>)

About the Certificate

The graduate certificate in Neuroscience was established in the College of Liberal Arts in 2008 to impart training to graduate students who are interested in developing an in-depth understanding of neuroscience and pursuing research in this area. Students are required to fulfill the following requirements as a part of this certificate program:

1. Must currently be a matriculating graduate student in good standing in a Temple University Ph.D. program.
2. Must meet all obligations of the student's participating department.
3. Must include one member of the Neuroscience program on her/his dissertation committee.
4. Must enroll in NSCI 9381 Readings in Neuroscience, which requires attending and participating in the seminars/journal clubs of the Neuroscience program, for three academic terms of 1 credit each.
5. Must enroll in two courses in each of the following Neuroscience specialization areas:
 - Behavioral/Cognitive/Systems Neuroscience
 - Cellular/Molecular Neuroscience

Upon successful completion of all departmental and Neuroscience program requirements, students receive a Ph.D. degree in the discipline represented by their department with a certificate in Neuroscience. Doctoral students enrolled in the Departments of Biology and Psychology can be awarded this specialization in Neuroscience.

Campus Location: Main

Full-Time/Part-Time Status: The graduate certificate can be completed only on a full-time basis.

Non-Matriculated Student Policy: Students can take up to 9 credits on a non-matriculated basis. When they complete 9 credits, they must declare their intention to complete the graduate certificate in Neuroscience by completing and submitting the "Non-Degree Seeking Student Request to Exceed 9 Credits of Graduate Coursework for Certificate Program," found in TUportal under the Tools tab within "University Forms."

Admission Requirements and Deadlines

Bachelor's Degree in Discipline/Related Discipline: Applicants already admitted to a graduate degree program at Temple University have demonstrated that they possess the required bachelor's degree.

Certificate Requirements

Number of Credits Required to Complete the Certificate: 15

Required Courses:

Code	Title	Credit Hours
NSCI 9381	Readings in Neuroscience (3 terms)	3
Behavioral/Cognitive/Systems Neuroscience courses ¹		6
Cellular/Molecular Neuroscience courses ¹		6
Total Credit Hours		15

¹ Of the four Neuroscience courses required in the specialization areas, three 3-credit courses are mandatory. One course may, however, be taken from the 2-credit courses offered by the Lewis Katz School of Medicine, which ensures that students have a wider breadth of course selection in the certificate program. When a student selects a 2-credit course, s/he is limited to taking one such course and, to achieve the 15 credits required to earn the certificate, must take an additional academic term of NSCI 9381 Readings in Neuroscience (1 s.h.).

Contacts

Certificate Program Web Address:

<https://www.cla.temple.edu/neuroscience/graduate/>

Department Information:

College of Liberal Arts Neuroscience Program

618 Weiss Hall
1701 N. 13th Street
Philadelphia, PA 19122-6085
neuro@temple.edu
215-204-3441

Submission Address for Application Materials:

Rebecca Brotschul, Program Coordinator
Neuroscience Certificate
1701 N. 13th Street, 618 Weiss Hall (265-67)
Philadelphia, PA 19122-6085

Department Contacts:

CLA Neuroscience Program Coordinator:
Rebecca Anne Brotschul, M.Ed.
rebecca.brotschul@temple.edu
215-204-3441

Program Director:
Debra Bangasser, Ph.D.
debra.bangasser@temple.edu
215-204-1015

Courses

NSCI 5001. Systems and Behavioral Neuroscience. 3 Credit Hours.

The goals of this class are to expose Master's degree students to topics in systems and behavioral neuroscience. In addition, students will also be introduced to methods and techniques used for the analysis of neural and behavioral data. Through intensive instruction of systems underpinning sensory, motor, and integrative functions, as well as motivation, students will gain a thorough understanding of brain function/behavior and its neuronal correlates.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

NSCI 5002. Neurochemistry. 3 Credit Hours.

This course explores the major areas of cellular and molecular neurobiology, including cellular and subcellular components of the nervous system, neuronal excitability and molecular properties of ion channels, biochemistry of synaptic transmission, intracellular signaling, neurochemistry of learning and memory, cell injury and inflammation and psychiatric/neurodegenerative disorders. Material includes lectures, presentations and discussion of primary literature and journal articles that cover recent advances in the field. Additionally, students will get the opportunity to gain hands-on experience with some of the research methodologies used to study neurochemical processes.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

NSCI 5016. Professional Development in Neuroscience. 3 Credit Hours.

This course will help prepare you for the remainder of your master's degree by providing the required laboratory and animal training, laboratory technique training, research and presentation skills training, and discussion of ethical issues in the field. The first module of this course will cover all the necessary laboratory and animal training and the second module will expose students to contemporary neuroscience techniques. The third module will provide training in research and presentation skills including how to design a research study, write a research paper and presenting your results. In the fourth module, we will discuss the ethical issues in neuroscience and consider the future challenges that may arise from the evolving study of the genetic and neurobiological determinants of behavior.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

NSCI 8007. Neuroendocrinology. 3 Credit Hours.

This course will provide an in-depth exploration of the interactions between the endocrine system and the nervous system. The role of hormones in modulating behaviors and mental processes will be covered with the following topics: sex determination and differentiation, reproduction, parental behavior, social behavior, homeostasis, biological rhythms, stress, learning and memory, and affect. Multidisciplinary approaches to understand neuroendocrine function and dysfunction from the molecular to systems level will be covered.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

NSCI 8008. Neuropsychopathology. 3 Credit Hours.

This course will provide an in-depth exploration of neuropsychopathology. Students will learn about recent advances in the understanding of the neurobiology mechanisms that underlie psychiatric disease, neurodegenerative, and neurological disorders. How available and experimental treatments for these disorders work also will be covered.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

NSCI 8009. Neuroscience Drug Discovery. 3 Credit Hours.

This course will consist of a series of didactic sessions and seminar-style discussions on topics that cover major aspects of the drug discovery process including lead/target identification, validation, preclinical pharmacology, toxicity and clinical trials. The course will also address unique challenges of research translation from preclinical to early and late phases of clinical development. Additionally, the technical and clinical aspects of biomarker validation needed to be applied to the different aspects of drug development process will be discussed.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

NSCI 8010. Topical Seminar in Neuroscience. 3 Credit Hours.

This seminar course will expose graduate students to contemporary issues in a specific area of neuroscience. Students will examine different topics through interactive lectures, discussion of research papers in a seminar-like format, and critical analysis of research studies. Importantly, this course will allow students to develop perspectives on recent advances in diverse areas including cellular and molecular neuroscience, systems and behavioral neuroscience, developmental neuroscience, social neuroscience, cognitive neuroscience, and overlapping cross-cutting themes across these areas. The course topics/themes will vary from semester to semester.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

NSCI 9381. Readings in Neuroscience. 1 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

NSCI 9991. Directed Research. 1 to 6 Credit Hour.

This course is intended to meet the needs of students who desire to carry on an individual investigation while working towards the Master's degree in Neuroscience.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.