NEUROSCIENCE, PHD

Banner Code: SC-PHD-NEUR

Academic Advising

204 Krasnow Institute
Fairfax Campus

Phone: 703-993-4334
Email: neurosci@gmu.edu
Website: neuroscience.gmu.edu

The Neuroscience, PhD program focuses on the study of the brain and addresses the challenge of developing an integrative understanding of cognition and higher brain function. In response to this challenge, the rapidly developing field of neuroscience has produced an exponential increase in the amount of data available to investigators as they develop new theories of brain function and new hypotheses to test. The main objective of the program is to prepare students to participate at the cutting edge of this exciting field in academia, industry, and government. The program provides students with a rich interdisciplinary intellectual environment that fosters the development of the skills they will need to successfully pursue research careers.

Current faculty research focuses on the broad areas of behavior, anatomy, physiology, neuropharmacology, molecular biology, computational modeling, and informatics. External research collaborations exist with federal agencies, private and not-for-profit corporations, and other universities. The scope of research ranges from the subcellular and molecular level (in the context of such phenomena as drug addiction and the biological basis of schizophrenia) to the systems and behavioral level.

Current research projects include plasticity mechanisms supporting development, network formation and information processing, network/cellular/subcellular models of associative learning, biochemical dynamics in disorders of the basal ganglia, computational methods for simulation of complex biological systems, role of metals in memory and Alzheimer's disease, and dynamical behavior of neurons and networks of neurons, and identifying and characterizing protein interactions for the dopamine and nicotinic acetylcholine receptors in the brain.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies (http://catalog.gmu.edu/admissions/graduate-policies/) section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants should have a bachelor's degree in a relevant field and undergraduate courses in organic chemistry, cell biology, and calculus. Coursework in biochemistry (e.g. BIOL 483 General Biochemistry), cell biology (e.g. BIOL 484 Cell Signaling and Disease), and molecular genetics (e.g. BIOL 482 Introduction to Molecular Genetics) is highly recommended. Admission requires a minimum GPA of 3.25 in undergraduate work. The applicant's goal statement should relate to the research interests of at least one faculty member in the program

and include the names of two faculty members who may be suitable as advisors or supervisory committee members.

To apply, complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), supply a goal statement, two copies of official transcripts from each college and graduate institution attended, three letters of recommendation from faculty members or individuals who have firsthand knowledge of the applicant's academic or research capabilities. TOEFL scores are required of all international applicants.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies (http://catalog.gmu.edu/policies/academic/graduate-policies/).

Reduction of Credits

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the college's associate dean for student affairs. See AP.6.5.2 Reduction of Credits (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-5-2) for more information.

Transfer of Credit

An alternative to the reduction of credit is a transfer of credit. With this option, up to 24 credits of previous, relevant graduate coursework may be transferred into the program, provided those credits have not been applied toward a previous degree.

Requirements

Degree Requirements

Total credits: 72

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Doctoral Coursework

Code	Title	Credits
Core Science		
NEUR 702	Research Methods	3
Select one statistics option from the following:		3-8
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
PSYC 642 & PSYC 643	General Linear Modeling I and General Linear Modeling II	
STAT 535	Analysis of Experimental Data	
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	
Core Neuroscience		
NEUR 601	Developmental Neuroscience	3
NEUR 602	Cellular Neuroscience	3
NEUR 603	Mammalian Neuroanatomy	3

NEUR 701	Neuroscience Laboratory	3
Rotations and Readings		
NEUR 703	Laboratory Rotation and Readings (taken three times)	9
Electives		
Select 16-21 credits of electives or independent research in order to achieve 48 pre-dissertation credits. The courses must be approved by the student's advisor, providing further substantive or methodological specialization.		16-21
Elective course options for students interested in attaining professional skills include:		
COS 600	Multidisciplinary Problem Solving and Leadership	
Complete the Business Fundamentals Graduate Certificate and receive both the graduate certificate and the Neuroscience PhD upon completion of both programs' requirements. (http://catalog.gmu.edu/colleges-schools/business/business-fundamentals-graduate-certificate/)		
Total Credits:		**48**

Publication

An additional requirement for graduation calls for students to have at least one publication (in print or in press) in a refereed journal.

Doctoral Committee and Proposal

When coursework is nearing completion, the student should form a doctoral committee of at least three graduate faculty members and start preparing their dissertation proposal. Students in consultation with their advisor identify which faculty are appropriate to be a part of their committee. The dissertation committee administers the qualifying exam and evaluates the dissertation proposal as well as the dissertation itself. At least one of the committee members must be outside of the dissertation advisor's department.

Candidacy Examination and Advancement to Candidacy

The doctoral candidacy examination includes written and oral components. After passing the candidacy exam and receiving committee approval for the dissertation proposal, the student is advanced to doctoral candidacy.

Dissertation Research

Note: No more than 24 combined credits from NEUR 998 Dissertation Proposal and NEUR 999 Doctoral Dissertation may be applied toward satisfying doctoral degree requirements, with no more than 12 credits of NEUR 998 Dissertation Proposal.

Code	Title	Credits
Select 24 credits from the following:		24
NEUR 998	Dissertation Proposal	
NEUR 999	Doctoral Dissertation	
Total Credits		24