NEUROSCIENCE, M.S. OR PH.D.

About the Program

The Graduate Program in Neuroscience emphasizes a multidisciplinary approach to understand the structure and function of the normal and diseased nervous system. The diversity of research represented in this program spans focus areas from molecular neuroscience and systems neurobiology, to functional neuroscience. Molecular neuroscience involves biochemical investigations at the cellular and molecular levels and includes studies on neurotransmitter systems, pharmacology of neurotransmission, interactions of drugs with receptors, gene regulation, molecular biology of neurological disease, and mechanisms of signal transduction. Systems neurobiology encompasses studies of multi-neuronal networks that range from neural circuitry underlying the control of cardiac and respiratory function to endocrine control, stress and pain mechanisms. Functional neuroscience includes the disciplines of neurology, biological psychology, and behavioral neuroscience. Students in the Graduate Program in Neuroscience are exposed to all focus areas, providing a strong inter-disciplinary foundation on which to build comprehensive and innovative research programs. The interdisciplinary nature of the Graduate Program in Neuroscience provides students with the breadth of knowledge and technical acumen that is highly sought in today's competitive job market.

Career Opportunities

The interdisciplinary nature of the Graduate Program in Neuroscience provides students with the breadth of knowledge and technical acumen that is highly sought in today's competitive job market. Therefore, individuals who graduate with a PhD in Neuroscience have a number of exciting and rewarding career opportunities in academic research, biotechnology, pharmaceutical companies, teaching, medical and technical writing, and health and bioscience management.

Career opportunities in neuroscience are expected to increase with countless diseases affecting the nervous system still in need of a cure. The importance of Neuroscience is better shown by the listed statistics. An estimated 4.5 million Americans have Alzheimer's disease and that number expected to double by 2025 and an estimated 400,000 Americans have Multiple Sclerosis with 200 more people being diagnosed weekly. A staggering 2.7 million Americans of all ages are affected by epilepsy and seizures, and the list continues with Huntington's Disease, Lou Gehrig's Disease, Strokes and many others. Paul Lauterbur, Sir Peter Mansfield, Roderick MacKinnon, Linda Buck and Richard Axel are the latest of a long string of neuroscientists who have been named Nobel Laureates. Neuroscience is an exciting frontier. We invite you to become a part of this discovery process.

Cost

It is the student's responsibility to ensure they are enrolled in the prescribed courses and to pay tuition and fees at the time designated by the Bursar's Office. Details regarding tuition/fee charges and collection are available from the Bursar's Office.

Prerequisites

- Bachelor's degree from an accredited institution
- Grade point average of 3.0 or above calculated using the upper-division coursework of the bachelor's degree.
- Proof of language proficiency for international applicants: TOEFL score of 88 or above for most programs. The MHA program requires a TOEFL score of 100 IBT.
- GRE (http://www.ets.org/gre/) test is required for all degrees and programs.

Master of Science Degree Requirements

Admission requirements are the same for the MS degree as for the doctoral program. The Master of Science program has the option of a non-thesis master's degree with a minimum of 33 credit hours (3.0 GPA on all graduate level coursework). The course work consists of required or core courses and elective courses selected based on individualized career plans. A maximum of 8 graduate credit hours can be transferred from other institutions. For the non thesis masters degree, a satisfactory performance on a comprehensive exam is required.

Code	Title	Hours
Fall - Year 1		
PHYO 5016	Human Physiology	4-6
or BIOC 5104	Biochemistry	
Electives		3-5
Spring - Year 1		
OCNS 5406	Medical Neuroscience	6
BSE 5163	Biostatistical Methods I	3
Summer - Year 1		
BMSC 5001	Integrity in Scientific Research	1
Electives		2
Fall - Year 2		
OCNS 6503	Neurobiology of Disease	3
OCNS 5411	Survey Of Neuroscience Methods	1
Electives		3
Additional Requirements		
Thesis Track		
OCNS 5980	Research for Masters Thesis	
OCNS 5401	Current Topics In Neuroscience	
Non-Thesis Track		
OCNS 6990	Special Studies In Neuroscience (Lab Experience)	
OCNS 5401	Current Topics In Neuroscience	

Code	Title	Hours
Suggested List of Electives		
OCNS 5960	Directed Readings	1-6
OCNS 6311	Neuroinflammation and Neuroimmunology	1
OCNS 6321	Molecular and Cellular Aspects of Vision	1
OCNS 6201	Behavioral Neuroscience	1
PATH 6043	Care and Use of Research Animals	3

Doctor of Philosophy Degree Requirements

All doctoral students must successfully complete 90 credit hours of course work, pass a written and oral qualifying examination, and defend their dissertation research in a public forum. In addition, students will be required to participate in the Seminar Series, Neuroscience Symposium, Neuro Nights and take the following courses: Neurobiology of Disease,

Neuroanatomy, Neurophysiology, Neuroscience Journal Club, Current Topics in Neuroscience, and Neuroscience Methods.

Code	Title	Hours
Fall - Year 1		
BMSC 5001	Integrity in Scientific Research	1
BMSC 5221	Interdisciplinary First Year Journal Club	1
BMSC 5300	Interdisciplinary Special Topics	1-3
BMSC 6152	Cellular Systems I	2
BMSC 6012	Molecular Systems I	2
Electives		4
Spring - Year 1		
BMSC 5221	Interdisciplinary First Year Journal Club	1
BMSC 6052	Cellular Systems II	2
BMSC 6112	Molecular Systems II	2
OCNS 6101	Neurobiology	1
OCNS 6201	Behavioral Neuroscience	1
OCNS 6311	Neuroinflammation and Neuroimmunology	1
OCNS 6321	Molecular and Cellular Aspects of Vision	1
OCNS 5571	Neuropharmacology	1
Summer - Year 1		
OCNS 6990	Special Studies In Neuroscience	1-3
Fall - Year 2		
OCNS 6503	Neurobiology of Disease	3
OCNS 6512	Neuroanatomy	2
OCNS 5406	Medical Neuroscience	6
OCNS 5411	Survey Of Neuroscience Methods	1
OCNS 5401	Current Topics In Neuroscience	1
OCNS 6990	Special Studies In Neuroscience	1-3
Spring Year 2		
OCNS 6001	Neuroscience Journal Club	1
OCNS 6980	Research For Doctor's Dissertation	2-16
Fall - Year 3		
OCNS 6001	Neuroscience Journal Club	1
OCNS 6980	Research For Doctor's Dissertation	2-16
Spring - Year 3		
OCNS 6001	Neuroscience Journal Club	1
OCNS 6980	Research For Doctor's Dissertation	2-16
Summer - Year 3		
OCNS 6001	Neuroscience Journal Club	1
OCNS 6980	Research For Doctor's Dissertation	2-16
Fall - Year 4		
OCNS 6001	Neuroscience Journal Club	1
OCNS 6980	Research For Doctor's Dissertation	2-16
Spring - Year 4		
OCNS 6001	Neuroscience Journal Club	1
OCNS 6980	Research For Doctor's Dissertation	2-16

Notes:

- Minimum of 38 hours required of OCNS 6980 Dissertation Research.
- Student's advisory committee sets the remainder of any needed requirements to meet the 90 hours required for the degree.

Admissions Requirements

Students in the PhD program in neuroscience currently enter through either the Graduate Program in Biomedical Sciences (GPiBS) (http://graduate.ouhsc.edu/Graduate-Programs/PhD-Programs/Graduate-Program-in-Biomedical-Sciences/), which serves as a gateway into the basic science graduate programs at the University of Oklahoma Health Sciences Center or directly into the Neuroscience Program. First year graduate students entering through GPiBS (http://graduate.ouhsc.edu/Graduate-Programs/PhD-Programs/Graduate-Program-in-Biomedical-Sciences/) complete interdisciplinary coursework emphasizing molecular aspects of cell and organismal biology, along with research rotation(s) during the first year. First year graduate students entering directly into the Neuroscience program complete the first semester of the inter-disciplinary coursework emphasizing molecular aspects of cell biology, the second semester they complete Medical Neuroscience, along with research rotation(s). After the first year, graduate students in neuroscience complete advanced neuroscience coursework and their dissertation research. A total of 90 credit hours are required for a PhD in Neuroscience.

An application is filed with the Office of Admissions and is accompanied by official transcripts and results of the Graduate Record Examination (GRE), and TOEFL for foreign applicants. Three letters of recommendation that address the candidate's research potential and suitability for graduate school and a goals/purpose statement are also required.

Students who already have a Master's degree or those who have completed graduate level coursework equivalent to the GPiBS curriculum and wish to apply for a PhD should contact directly the Graduate Program in Neuroscience. Admission for the non- thesis MS degree is also routed directly through the Graduate Program in Neuroscience. For more information about admission into the Graduate Program in Neuroscience, please call (405)271-6267.

Program Objectives

The Graduate Program in Neuroscience emphasizes a multidisciplinary approach to understand the structure and function of the normal and diseased nervous system. The diversity of research represented in this program spans focus areas from molecular neuroscience and systems neurobiology, to functional neuroscience. Molecular neuroscience involves biochemical investigations at the cellular and molecular levels and includes studies on neurotransmitter systems, pharmacology of neurotransmission, interactions of drugs with receptors, gene regulation, molecular biology of neurological disease, and mechanisms of signal transduction. Systems neurobiology encompasses studies of multi-neuronal networks that range from neural circuitry underlying the control of cardiac and respiratory function to endocrine control, stress and pain mechanisms. Functional neuroscience includes the disciplines of neurology, biological psychology, and behavioral neuroscience. Students in the Graduate Program in Neuroscience are exposed to all focus areas, providing a strong inter-disciplinary foundation on which to build comprehensive and innovative research programs.