

NEUROSCIENCE (NSC)

NSC 820 METHODS IN NEUROSCIENCE 2 Credit Hours

The primary goal of this course is to provide graduate students, through lectures and practical laboratory exposure, with current techniques and methodologies in neurosciences that are most likely used in their thesis research.

Prerequisite: Permission of instructor.

Instructor: Palsamy Periyasamy, Ph.D.

Typically Offered: FALL

NSC 896 RSCH OTHER THAN THESIS 1-9 Credit Hours

Student research that is clearly distinct from ongoing or planned thesis/dissertation work, or research/lab rotations performed prior to selecting a permanent advisor or supervisor.

Typically Offered: FALL/SP/SU

NSC 907 NEURAL SYSTEMS & THE PHYSIOLOGY OF NEURONAL CELL POPULATIONS 2 Credit Hours

This course aims to establish an understanding of population-level neurophysiology in human and non-human primates. Fundamental concepts to be covered will include biophysics of neural populations, dendritic potentials, cortical mini- and macro-columns, neural oscillatory dynamics, distributed processing, neural systems of the human brain, and supra-thalamic functional neuroanatomy.

Prerequisite: BRTP 824, PHAR 820 and permission of instructor.

Typically Offered: SPRING

NSC 911 SPECIAL TOPICS JOURNAL CLUB 1 Credit Hour

This course is designed to help students acquire fundamental skills needed for critically reading and evaluating the scientific literature and effectively disseminating scientific data through oral presentations and visual aids.

Instructor: Keshore Bidasee, Ph.D. and JoEllyn McMillan, Ph.D.

Typically Offered: FALL/SPR

NSC 913 DATA SCIENCE FOR BIOMEDICAL RESEARCHERS 2 Credit Hours

ELECTIVE

This course is designed to provide an in-depth understanding of the principles and practices neuroscientists may use for mining large data sets to address clinically relevant questions. Topics to be covered include the principles of data science, best practices in coding, and application of relevant machine learning and advanced statistical methods to neural data.

Prerequisite: Permission code of instructor. Familiarity with coding in Matlab, python, or another similar language

Instructor: Stephen Gliske and guest speaker faculty from University of Nebraska

Typically Offered: SPRING

Capacity: 15

NSC 922 MOLECULAR & CELLULAR NEUROSCIENCE 3 Credit Hours

A lecture based course that will provide an in depth understanding on the development and function of neuronal cells. Emphasis is placed on cell types (neurons, astrocytes, microglia), their molecular mechanisms of activation (ligands, receptors, ion channels, environment) and how dysregulation of the function of these cells lead to neuronal and neurodegenerative diseases.

Prerequisite: IPBS 803 and/or permission of instructor.

Typically Offered: SPRING

NSC 930 NEUROIMMUNOLOGY 3 Credit Hours

The objective NSC 930 (cross-listed PAMM 930) Neuroimmunology (3CR) is to provide essential knowledge towards a better understanding of the principles of Neuroimmunology and Pharmacology as they apply to the pathogenesis and pharmacotherapeutics of neurodegenerative disorders and disorders in which the immune system is implicated. The course is designed for in depth study of neurobiology, neuroimmunology, neuropharmacology, immunotherapy, and neurodegenerative disorders. The course is based on the textbook Neuroimmune Pharmacology, second edition, edited by Ikezu and Gendelman (Springer ISBN 978-3-3-319-44020-0). This is an essential course for pursuing a path exploring interdisciplinary studies of neurology, immunology and/or pharmacology in the IGPBS Neuroscience program.

Typically Offered: SPRING

NSC 932 SYSTEMS NEUROSCIENCE 3 Credit Hours

A lecture based course that will provide an in depth understanding of how the neural networks in the human brain co-ordinate to provide visual, auditory, somatosensory, motor, limbic and higher order (memory, learning) to form/create perceptions of the external world, make decisions, and execute movements.

Prerequisite: IPBS 803, NSC 922, and/or permission of instructor.

Instructor: Tony Wilson, Ph.D.

Typically Offered: SPRING

NSC 950 SPECIAL TOPICS IN PHARMACOLOGY/ GRADUATE PHARMACOLOGY 2 Credit Hours

To provide students with critical information needed for his/her dissertation research in situations where either no course exist or existing didactic courses are too extensive and deemed unnecessary.

Typically Offered: FALL/SPR

NSC 970 SEMINAR 1 Credit Hour

Attendance at weekly seminars offered by the department/program, or other activities specific to the degree program (contact the program director for more information).

Typically Offered: FALL/SPR

NSC 999 DOCTORAL DISSERTATION 1-15 Credit Hours

Independent student research related to the PhD dissertation. This course may be utilized before or after successful completion of the comprehensive exam.

Typically Offered: FALL/SP/SU