

Interfaculty Graduate Neuroscience Program (IGNP)

The interfaculty graduate program leading to the MS degree in neuroscience draws on the resources of the Faculty of Medicine, the Faculty of Engineering and Architecture, and the Faculty of Arts and Sciences, and is administered by graduate committees of the faculties concerned.

Neuroscience is the study of the nervous system. It includes an interrelated set of scientific disciplines including basic (neuroanatomy, neurophysiology, neurochemistry, neuropharmacology, neurobehavior) and clinical (neurology, neurosurgery, anesthesiology, neuropathology, ophthalmology, psychiatry) subjects. Although the participating faculty comes primarily from the Department of Anatomy, Cell Biology and Physiology (former Physiology and Human Morphology Departments) contributions are made from faculty in the Neurology and Neurosurgery Divisions and the Psychiatry Department in the Faculty of Medicine, the Biology Department in the Faculty of Arts and Sciences, and the Electrical Engineering Department in the Faculty of Engineering and Architecture.

The Interfaculty Graduate Neuroscience Program is a member of the Association of Neuroscience Departments and Programs (ANDP) in Bethesda, Maryland (USA), whose aim is to advance education and research in neuroscience.

Admission Requirements

Student applicants must be recommended for admission by both the department concerned and the appropriate graduate committee. The program is flexible in accepting students from a variety of backgrounds, including MD graduates and holders of the BS degree from various university programs.

Graduation Requirements for the MS in Neuroscience

- Students holding a BS or BA degree are required to take a minimum of 21 graduate credit hours and present a thesis based on independent research in one of the basic neuroscience subjects.
- Holders of the MD degree, or medical students who have completed the first two years towards the MD, are required to take a minimum of 10 non-medical graduate credit hours in addition to a thesis.
- Only one course (IDTH 308 - Basic Neuroscience (6 credits)) is required, in addition to a wide choice of electives from various departments and faculties.

Average Length of Time

- Four semesters for holders of BS or BA degrees.
- Two semesters for MD graduates or medical students who have completed the first two years of the medical program.

Course Descriptions

Required Courses

IDTH 308 **Basic Neuroscience** **62.54; 6 cr.**
A course that covers the structure and function of the human nervous system. This course can also be taken in two parts: *IDTH 308A and IDTH 308B. Six weeks. Annually.*

IDTH 308A **Neuroanatomy** **31.27; 3 cr.**
Offered to graduate students the course covers normal structure of the human nervous system. *See Department of Human Morphology. Three weeks.*

IDTH 308B **Neurophysiology** **31.27; 3 cr.**
Offered to graduate students the course covers function of the human nervous system. *See Department of Physiology. Three weeks.*

IDTH 301 **Introduction to Medical Science Literature** **16.32; 2 cr.**
A multi-disciplinary approach to the use of medical science publications (open to beginning graduate students in the Faculty of Medicine). *This course is a requirement for all graduate students in the Faculty of Medicine.*

IDTH 397–398 **MS Thesis** **9 cr.**

Recommended Courses

IDTH 309 **Biology of Nerve and Muscle** **48.0; 3 cr.**
A multi-disciplinary study of anatomy, physiology, biochemistry, pharmacology, and pathology of nerve and muscle. *Alternate years.*

PHYL 310 **General Physiology: Cellular Mechanisms** **48.16; 3 cr.**
A study of aspects of membrane transport processes across symmetrical and asymmetrical cell membranes, electrophysiology, membrane potentials, action potentials in excitable cells, synaptic transmissions, receptors and excitation-contraction coupling in muscles. *Annually.*

PHYL 324 **Electrophysiology of Excitable Cells** **12.9; 1 cr.**
A study of the basic mechanisms of membrane cable property and resting potentials in all cells, action potential initiation and propagation in excitable cells, receptor physiology, central synaptic transmission, neuromuscular transmission, and muscular contraction. *Annually.*

In addition, any elective graduate course from other graduate programs.