

# Interfaculty Graduate Neuroscience Program (IGNP)

The Interfaculty Graduate Neuroscience 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. Since its inception in 1974, the program has been run by faculty in the Department of Anatomy, Cell Biology and Physiological Sciences (DACP; former Physiology and Human Morphology Departments). Although the participating faculty comes primarily from the DACP, contributions are made from faculty in the Neurosurgery Division and the Neurology and Psychiatry Departments and from other departments in the Faculty of Medicine, the Biology and Psychology Departments in the Faculty of Arts and Sciences, and the Electrical Engineering Department in the Maroun Semaan Faculty of Engineering and Architecture.

The Interfaculty Graduate Neuroscience Program (IGNP) 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

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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. Applications must be submitted through the AUB website; selected applicants must fulfill the admission criteria for graduate studies at AUB.

## Graduation Requirements for the MS in Neuroscience

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- Students holding a BS or BA degree are required to take a minimum of 21 graduate credit hours and present a thesis (9 credits) 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 (9 credits).
- 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

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## Required Courses

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

**IDTH 308A**                    **Neuroanatomy**                    **31.27; 3 cr.**  
This course is offered to graduate students. The course covers normal structure of the human nervous system. *See HUMR 308 in the Department of Anatomy, Cell Biology and Physiological Sciences.*

**IDTH 308B**                    **Neurophysiology**                    **31.27; 3 cr.**  
This course is offered to graduate students. The course covers function of the human nervous system. *See PHYL 308 in the Department of Anatomy, Cell Biology and Physiological Sciences.*

**IDTH 395 A/B**                    **Comprehensive Exam**                    **0 cr.**  
*Prerequisite: Consent of advisor.*

**IDTH 399**                    **MS Thesis**                    **9 cr.**  
**A/B/C/D/E**

## Recommended Courses

**HUMR 305**                    **Cell and Tissue Biology**                    **30.33; 3 cr.**  
Consists of the first half of Basic Histology, HUMR 209, covering cells and tissues. *Open to all graduate students.*

**HUMR 310**                    **Biomedical Research Techniques**                    **28.46; 3 cr.**  
A guided laboratory course in research methods used in cell biology and physiology. *Open to graduate students.* The course is made of three modules that can all be selected or selected as one module per specialty as follows:

**HUMR 310A**                    **Cell Biology Techniques**                    **10.15; 1 cr.**

**HUMR 310B**                    **Genomics and Proteomics**                    **10.15; 1 cr.**

**HUMR 310C**                    **Mouse Models and In Vivo Studies**                    **8.16; 1 cr.**

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

**PHYL 310**                    **General Physiology: Cellular Mechanisms**                    **32.16; 3 cr.**  
A course on aspects of membrane transport processes across symmetrical and asymmetrical cell membranes, electrophysiology, membrane potentials, action potentials in excitable cells, synaptic transmissions and excitation-contraction coupling in muscles. *Open to all graduate students.*

**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 may be taken.**