

Department of Anatomy, Cell Biology and Physiological Sciences

Chairperson:	Saadé, Nayef
Professors:	Bikhazi, Anwar; Birbari, Adel; EL-Sabban, Marwan; Jurjus, Abdo; Mourad, Fadi; Saadé, Nayef
Assistant Professors:	Eid, Assaad; Nasr, Rihab; Zeidan, Asad
Associates:	Barada, Kassem; Chidiac, Jose; Kibbi, Abdul-Ghani; Rebeiz Abdallah; Saab, Raya

The Department offers three programs of study: Anatomy and Cell Biology, Physiology, and Basic Neuroscience. Each program provides courses to medical students, graduates, paramedical and undergraduate students.

The graduate program is a broad one leading to the MS degree in Human Morphology (Anatomy and Cell Biology), Physiology and in Neuroscience. Students with a BS degree or its equivalent, in mathematics, biology, physics, and chemistry in the Faculty of Arts and Sciences, as well as advanced courses in physiology and other medical science disciplines, are eligible to apply. The department may ask for specific prerequisites in certain disciplines such as biology and chemistry as deemed necessary.

Anatomy and Cell Biology

- HUMR 207** **Gross Anatomy** **24.198; 7 cr.**
A regional dissection of the entire human body supplemented by embryology, clinical lectures, and discussions. The student is also introduced to radiographic anatomy based on various imaging modalities, in addition to computer-assisted instruction. *Required of all medical students.*
- HUMR 208** **Neuroanatomy** **32.30; 3 cr.**
A functional study of the anatomical organization of the human central nervous system.
- HUMR 209** **Basic Histology** **58.69; 6 cr.**
A study of the cells, tissues, and organs of the human body at the level of the light and electron microscopes, utilizing traditional and advanced methodologies. Structure is related to function with some clinical application. *Required of all medical students. Annually*
- HUMR 246** **Human Morphology for paramedical students** **32.32; 3 cr.**
An introduction to basic gross anatomy and histology. Offered to Nurses and other undergraduate students.

- HUMR 305 General Histology 30.33; 3 cr.**
A course that consists of the first half of Basic Histology, HUMR 209, covering basically cells and tissues. *Open to graduate students outside the department.*
- HUMR 306 Organ Histology 28.36; 3 cr.**
A course that consists of the second half of Basic Histology, HUMR 209, covering organs and systems. *Open to graduate students. Prerequisite: HUMR 305 or its equivalent.*
- HUMR 307 Gross Anatomy**
The same as HUMR 207. *Offered to graduate students in the department.*
- HUMR 308A Neuroanatomy 28.39; 3 cr.**
The neuroanatomy component of Neuroscience, IDTH 208. *Offered to graduate students.*
- HUMR 309 Basic Histology 58.69; 6 cr.**
Similar to HUMR 209. *Offered to all graduate students in the department.*
- HUMR 310 Methods in Morphology 0.64; 2 cr.**
A guided laboratory course in methods used in morphology and cell biology research. *Open to graduate students.*
- HUMR 312 Anatomy Tutorial 0.64; 2 cr.**
A guided literature review of special research topics.
- HUMR 313 Directed Reading and Research 0.32-96; 1-3 cr.**
Specific reading and research assignments under supervision of an adviser. *At the discretion of the thesis supervisor.*
- HUMR 314/315 Research Seminar 0.32; 1 cr.**
Presentation and discussion of timely research topics designated by members of the department.
- HUMR 316 Principles of Electron Microscopy 32.0; 2 cr.**
Lectures on, and demonstration of, basic techniques of electron microscopy. *Alternate years.*
- HUMR 318 Principles of Histochemistry 16.48; 3 cr.**
Lectures, demonstration, and laboratory work related to the principal techniques of histochemistry, including immuno-histochemistry. *Prerequisite: HUMR 305 or HUMR 309.*
- HUMR 319 Biology of Nerve and Muscle**
Equivalent to IDTH 309. *See Interdepartmental Teaching.*
- HUMR 346 Human Morphology for graduate students 48.32; 4 cr.**
A course that includes the embryology component of HUMR 207, the whole of HUMR 246, and an experimental anatomy part.
- HUMR 397/398 MS Thesis 9 cr.**
Original research under faculty supervision leading to the MS degree.
- HUMR 260 Elective in Human Morphology 0.180-360**
An elective for Medicine III and IV in which the student can select one or more disciplines within the department including applied immunology, general surgical anatomy, radiographic anatomy, experimental neuroanatomy, neuromuscular disorders, techniques for study of cells and tissues, and experimental neuropathology. *One to two months.*

HUMR 261 Elective in Basic Neuroscience 0.180-360

Open to Medicine III and IV students, graduate students in the combined MS-MD program and visiting medical students. The objective of this elective is to involve the students in a basic research project as part of the on-going studies in the neuroscience research laboratories of the Departments of Physiology and Human Morphology. These laboratories serve as a core to the interfaculty Graduate Neuroscience Program. The current research involves interfaculty collaboration among faculty members in various basic and clinical neuroscience fields as well as biology and electrical engineering. Students present a seminar about their work and evaluation of the elective is based on close observation of performance.

Physiology

PHYL 200 Homeostasis 32.6; 2 cr.

A course that studies the internal environment and its physiological regulation by two homeostatic organs: the lungs and the kidneys. Didactic lectures cover the physiology of the topic, treating internal environment, homeostasis and feedback mechanisms, the lung, the kidney, and electrolytes. *Annually.*

PHYL 202 Cardiovascular Physiology 31.6; 2 cr.

A course in which the cardiovascular system is presented with clear reference to pathophysiological and clinical events. Didactic lectures and seminar sessions define physiological concepts and emphasize structure-function relationships. Laboratory sessions familiarize the student with instrumentation and techniques in the cardiovascular field. *Annually.*

PHYL 204 Metabolism 32.12; 3 cr.

A course that covers the physiology of the gastrointestinal tract, metabolism and its regulation by the endocrine system, and reproduction. This course consists of lectures, conferences, and discussion sessions. *Annually.*

PHYL 208 Neurophysiology 31.27; 3 cr.

A course that investigates the physiology and various functions of the human nervous system.

PHYL 210 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. *Annually.*

PHYL 246 Human Physiology for Paramedical and Undergraduate Students 48; 4 cr.

A course that outlines fundamental principles of human physiology and the mechanisms governing the function of different body organs. *Prerequisites: BIOC 246 and, BIOL 201 (or BIOL 210).* *Annually.*

PHYL 300 Homeostasis

Similar to PHYL 200. *Offered to graduate students.*

PHYL 302 Cardiovascular Physiology

Similar to PHYL 202. *Offered to graduate students.*

PHYL 304 Metabolism

Similar to PHYL 204. *Offered to graduate students.*

PHYL 308 Neurophysiology

Similar to PHYL 208 and to IDTH 308B. *Offered to graduate students.*

PHYL 310 General Physiology: Cellular Mechanisms

Similar to PHYL 210. *Offered to graduate students.*

PHYL 311-312 Advanced Physiology**32.0; 2 cr.**

A guided study (experimental and theoretical) of the literature of the major topics in physiology. This course is conducted as a seminar. *Annually.*

PHYL 313-314 Physical Methods in Physiological Research**0.64; 2 cr.**

A guided laboratory course of the physical methods used in the major branches of physiology. *Annually.*

PHYL 317 Perspectives in the Physiological Sciences**32.0; 2 cr.**

A course on the study of selected readings and seminars in the history, philosophy, and methodology of the physiological sciences designed to give the student a broad view of the field of biology and its implications in everyday life. *Annually.*

PHYL 324 Electrophysiology of Excitable Cells**12.9; 1 cr.**

A course on the 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.*

PHYL 390 Directed Reading and Research**Credit hours vary**

Assignments based on the research interests of the graduate student and the adviser, aimed at formulating an original research project. *Annually.*

PHYL 391-392 Projects in Physiology**0.64; 2 cr.**

A physiological literature survey covering a given subject in the field. *Annually.*

PHYL 397-398 MS Thesis**Credit hours vary**

Original research under staff supervision, leading to the MS degree.

PHYL 260 Elective in Physiology**0.180-360.**

An elective that covers one or more areas of physiology such as special physiologic techniques, general physiology, experimental gastroenterology, experimental neuroscience, and the physiology of cardiac and vascular smooth muscles. *One to two months.*

Neuroscience

IDTH 208 Basic Neuroscience**6 cr.**

See Interdepartmental Teaching.

HUMR 308A Neuroanatomy**28.39; 3 cr.**

The neuroanatomy component of Neuroscience, IDTH 208. *Offered to graduate students.*

PHYL 308B Neurophysiology

Similar to PHYL 208 and to IDTH 308B. *Offered to graduate students*