Division of Health Professions

Director
Ramia, Sami

Executive Committee
Abouchacra, Kim (MIS Program Coordinator)
Al-Kutoubi, Aghiad (MAS Program Coordinator)
Ramia, Sami (MLS Program Coordinator)

The Division of Health Professions at the Faculty of Health Sciences hosts a joint program in health professions between the Faculty of Health Sciences and Faculty of Medicine. The program offers three majors: Medical Audiology Sciences (MAS), Medical Imaging Sciences (MIS), and Medical Laboratory Sciences (MLS).

Mission

The Health Professions Program, run jointly by the Faculty Health Sciences and the Faculty of Medicine, provides excellent educational curricula in all its majors with intensive hands-on training preparing students to deliver outstanding health services to the patient and the community. The Program conducts creative research linked to clinical medicine and public health. In all its functions, the Health Professions Program adheres to ethical values and promotes quality care with dignity and respect.

Vision

The Health Professions Program is a leading program in the Region preparing innovative and versatile health professionals who impact health and advocate patients’ rights.
Program of Medical Audiology Sciences

Coordinator and Professor: Abouchacra, Kim

This program is run in coordination with the Department of Otolaryngology Head and Neck Surgery in the Faculty of Medicine.

The mission of the Medical Audiology Sciences (MAS) Program is to prepare students for a successful career in audiology by providing them with a foundation in liberal arts education, coupled with a high-quality clinical education that is underpinned by the fundamental sciences of audiology and a rigorous scientific approach. The academic program is designed to produce skilled clinicians who follow professional standards and ethical principles while serving hearing or balance disorders individuals in Lebanon and the region. Through various professional and community service activities, the program strives to build in its students the importance of continuing education, developing leadership skills, as well as advocating and supporting the needs of all persons with hearing and vestibular disorders. The mission of the program is consistent with the mission of the institution in that it stresses the importance of providing academic excellence in teaching and research, inspiring students to become leaders in their professional field, as well as helping students to develop a lifelong sense of learning and civic responsibility.

For graduation, all students must obtain a minimum grade of 70 in each of ORLG 230 and ORLG 240 and a cumulative average of 70 in the major field of study.

MAUD 200 Overview of Audiology and Clinical Practice 1.0; 1 cr.
Course designed to acquaint the student with the profession of audiology and requirements for clinical practice. Students will complete 25 clinical observation hours. First and second semester respectively.

MAUD 201 Anatomy and Physiology of the Auditory – Vestibular System 3.0; 3 cr.
In-depth coverage of anatomy and physiology of the auditory and vestibular systems. First semester. Prerequisite: PHYL 246.

MAUD 202 Basic Audiological Procedures 2.2; 3 cr.
A detailed consideration of the rationale, development, and psychoacoustic theory behind pure tone audiometry, speech audiometry, and clinical masking. Acoustic immittance will also be covered. Students will learn to perform and interpret basic audiological procedures and master clinical masking through hands-on training and software-based activities. First semester. Prerequisite or corequisite: MAUD 200.

MAUD 203 Pediatric Audiology 3.0; 3 cr.
This course surveys methods and procedures used in the evaluation and management of auditory function in neonates, infants, and young children. It includes identification and intervention procedures. There will be a review of special populations of children with hearing loss. Development of early hearing loss detection and intervention programs will be discussed. First semester. Prerequisite or corequisite: MAUD 201.
MAUD 204  Acoustics, Psychoacoustics, and Instrumentation  2.2; 3 cr.
Course covers the fundamentals of sound, psychophysical measurement procedures, psychological acoustics, audiometric standards and electro-acoustic calibration of basic audiological equipment. Laboratory exercises are provided to illustrate course content. Second semester. Prerequisites: PHYS 205 and PHYS 205L.

MAUD 205  Amplification I  2.2; 3 cr.
This course covers the background and development of the design of hearing aids, ear mold acoustics, electroacoustic characteristics, performance standards and measurement techniques. Second semester. Prerequisite or corequisite: MAUD 204.

MAUD 206  Amplification II  2.2; 3 cr.
This course covers advanced procedures for selection and fitting of digital and programmable hearing aids. Students will learn subjective quality measurement, current and emerging prescriptive and fitting verification methods, and advanced hearing aid features. Auditory, visual, and vibrotactile receptive communication technologies will be covered, with an emphasis on needs assessment, selection, evaluation, and the verification process. Principles and procedures for implantable hearing devices from pre-candidacy evaluations through postoperative therapies will be discussed. First semester. Prerequisite: MAUD 205.

MAUD 207  Auditory Evoked Potentials  3.0; 3 cr.
This course will cover basic concepts in electrophysiological recordings (e.g., electrode types/uses, far and near field recordings, volume conduction, dipole sources). Recording of both near- and far-field electrical responses will be studied. Recording techniques and test interpretation of common clinical evoked verification potentials will be covered, including electrocochleography (ECoG), auditory brainstem response (ABR), and auditory steady-state response (ASSR). Second semester. Prerequisite: MAUD 201.

MAUD 208  Practicum Project  1.2; 2 cr.
Course aims to introduce students to research in the field of Audiology by engaging them in a Capstone project. Projects may take several forms including development of surveys, evidence-based research, business plans, critical literature reviews with applications to clinical problems solving, development of clinical protocols, or participation in on-going research projects in the department. Students will be required to write a scholarly report summarizing the project. Annually. Prerequisite: ORLG 230.

MAUD 209  Vestibular-Balance Assessment and Management  3.0; 3 cr.
The goal of the course is to provide you with a concise overview of the theory behind vestibular and balance testing and practical ways to assess and manage patients who have vestibular/balance problems. First semester. Prerequisites: MAUD 201 and ORLG 220.

MAUD 210  Aural Rehabilitation and Counseling  3.0; 3 cr.
Overview of approaches to audiologic management of adults and children with hearing difficulties. Topics include in-depth interview techniques, self-assessment instruments, auditory training, speech reading, interdisciplinary teaming, communication repair strategies, technology, adjustment to amplification, and management of auditory processing disorders. Operation and troubleshooting techniques for amplification systems commonly used in a classroom will be discussed (e.g., hearing aids, FM systems, assistive listening devices, vibrotactile devices, and cochlear implants). The course will also include psychoeducational/psychosocial and counseling strategies for patients and family management. First semester. Prerequisite: ORLG 230.
MAUD 211  Medical Audiology  2.2; 3 cr.  
An introduction to the major pathologies of the peripheral and auditory and vestibular systems. The course will include dysfunction arising from genetic factors, disease, and trauma, with an emphasis applied to presenting signs/symptoms, interpretation of laboratory / imaging results, and medical / surgical interventions. Second semester. Prerequisite: ORLG 240.

MAUD 212  Special Topics  2.0; 2 cr.  
This course is designed to address traditional or emerging topics in the field of audiology. The course will explore, in depth, a comparatively narrow subject which may be topical or of special interest to undergraduate students in Medical Audiology Sciences program. The course will be offered annually. Second semester. Senior Standing.

MAUD 213  Environmental Audiology  3.0; 3 cr.  
This course covers the effects of noise on health and society, hearing conservation programs, and noise measurement. Industrial, school, military, and social settings will be addressed. Second semester.

Below are descriptions of the required courses offered by several departments at the Faculty of Medicine: Human Morphology, Otolaryngology Head and Neck Surgery, and Physiology.

HUMR 246  Human Morphology  2.2; 3 cr.  
An introduction to basic gross anatomy and histology. First semester.

ORLG 220  Screening Procedures Laboratory  1.9; 3 cr.  
Beginning level audiologic practicum. Students will complete 90+ hours of clinical training under direct supervision. Clinical activities will include case history intake, biological calibration of equipment, otoscopic examinations, hearing screenings (pure tone, AABR, OAE), basic immittance testing. A weekly class meeting is held to discuss clinical cases and develop student report-writing skills. Infection control will also be discussed. First semester. Prerequisite or corequisite: MAUD 200 and 202

ORLG 230  Basic Clinical Procedures Laboratory  1.15; 5 cr.  
150+ hours of clinically-supervised direct patient care. Students will be expected to perform and interpret basic behavioral and electrophysiological tests, conduct electroacoustic assessment of hearing aids, make hearing aid adjustments based on probe-microphone and behavioral test results, and assist with the cochlear implant program. A weekly class meeting is held to discuss clinical decision making and report writing. Management of unique populations will be covered (tinnitus, hyperacusis, malingering, ototoxicity). Second semester. Prerequisite: ORLG 220.

ORLG 240  Advanced Clinical Procedures Laboratory  1.15; 5 cr.  
150+ hours of clinically-supervised direct patient care. Continued development of audiological assessment and intervention techniques for children and adults. Clinicians will be expected to administer and interpret balance/vestibular tests and electrophysiological tests, under direct supervision. A weekly class meeting is held to discuss clinical decision making and report writing. First semester. Prerequisite: ORLG 230.
ORLG 250  **Comprehensive Practice Laboratory**  1.15; 5 cr.  
150+ hours of clinically-supervised direct patient care. Clinicians will practice all aspects of audiological care, with greater independence. A weekly class meeting is held to discuss professional issues in audiology, including private practice management, coding and reimbursement, marketing and sales, malpractice, credentialing, and ethics and clinical integrity in the practice of the profession of audiology. Second semester. **Prerequisite: ORLG 240.**

**PHYL 246  Physiology for Nursing Degree Students and Undergraduates**  4.0; 4 cr. 
A course that outlines fundamental principles of human physiology and the mechanisms governing the function of different body organs. **Annually. Prerequisite: BIOL 201 or HUMR 246.**

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Program of Medical Imaging Sciences

Coordinator and Professor: Aghiad Al-Kutoubi
Associate Professor: Nabil Khoury

This program is run in coordination with the Department of Diagnostic Radiology in the Faculty of Medicine.

The mission of the Medical Imaging Sciences (MIS) Program is to provide students excellence in imaging education. MIS aims to produce academically and clinically competent radiographers who will become patient advocates in their field and perform their duties with empathy and respect towards all patients.

For graduation, all students must obtain a minimum grade of 70 in each of MIMG 201, 206 and 207 and a cumulative average of 70 in the major field of study.

MIMG 201 Introduction to Medical Imaging 2.0; 2 cr.
An overview of the field of radiologic technology and its role in health care delivery. Students are oriented to academic and administrative structure, and the profession as a whole. Basic principles of radiation protection are introduced. The ethical and legal responsibilities of the profession are discussed. First semester.

MIMG 202 Imaging Physics 3.0; 3 cr.
A course that focuses on AC generators, DC motors, transformers, and rectification of AC. An introduction to modern physics, production of x-rays, x-ray interactions, radioactivity, production of radionuclides, and health physics. Summer. Prerequisite: PHYS205.

MIMG 203 Medical Imaging Equipment I 3.0; 3 cr.
An introduction to various image-detecting and processing systems; description of analogue and digital detection systems. A detailed study of the x-ray tubes with methods of kV, mA, and exposure time control. Control of scattered radiation, image intensification, and television systems. First semester. Prerequisite: MIMG 202.

MIMG 204 Medical Imaging Equipment II 3.0; 3 cr.
A detailed study of the equipment design and function in Breast Imaging, Nuclear Medicine / PET, Computed Tomography, Ultrasonography and Magnetic Resonance Imaging. Second semester. Prerequisite: MIMG 203.

MIMG 205 Introduction to Principles of Diseases 2.0; 2 cr.
An introduction to pathology that focuses on nature and causes of diseases, diseases of the gastrointestinal and hepato-biliary systems, genito-urinary, and endocrine systems. A study of diseases of the nervous system, skeletal system, respiratory, cardio-vascular, and hematopoietic diseases; miscellaneous diseases related to nutrition and immune system. This course offers students information on the pathologic appearance of common diseases on a variety of diagnostic imaging procedures. First semester. Prerequisite: PHYL 246.
MIMG 206  Principle of Imaging I  3.0; 3 cr.
An introduction to radiographic procedures, radiographic nomenclature, positioning aids, and accessory equipment. This course also provides a description of radiographic procedures pertaining to upper and lower extremity, shoulder girdle, and pelvis; and a description of the radiographic procedures pertaining to the thorax, the vertebral column, the cranium, facial bones, and forensic radiography. Second semester. Prerequisite: MIMG 201.

MIMG 207  Principle of Imaging II  3.0; 3 cr.
An overview of contrast materials used in imaging. This course also provides a study of imaging procedures related to gastrointestinal, hepato-biliary, genitor-urinary and respiratory systems. Breast imaging techniques and interventional procedures related to different systems are discussed. First semester. Prerequisite: MIMG 206.

MIMG 208  Sectional Anatomy  3.0; 3 cr.
A study of the sectional anatomy of the head, neck, thorax, abdomen, pelvis, and extremities. Second semester. Prerequisite: HUMR 246.

MIMG 209  Quality Management and Image Analysis  3.0; 3 cr.
This course focuses on the quality assurance and quality control of the imaging systems. Emphasis is placed on quality assessment of diagnostic images/procedures. Second semester. Prerequisites: MIMG 204 and MIMG 207.

MIMG 210  Research Project  3.0; 3 cr.
The course will help the students to effectively analyze data from various resources to evaluate and improve professional practice, and to promote growth in the profession. Students will consider in their research, amongst others, ethical issues related to clinically based research, and the importance of enquiry into issues which cross professional boundaries. Second semester. Prerequisites: EPHD 203 and EPHD 213.

Below are descriptions of the required courses offered by several departments at the Faculty of Medicine: Diagnostic Radiology, Human Morphology, and Physiology.

DGRG 220  Clinical Practicum I  0.20; 2cr.
Clinical training in General Radiography, Mobile Radiography and Emergency Radiography within the Department of Diagnostic Radiology. Summer (6 weeks). Prerequisite: MIMG 201.

DGRG 230  Clinical Practicum II  0.20; 4cr.
Clinical training in General Radiography, Mobile Radiography, Emergency Radiography and General Fluoroscopy within the Department of Diagnostic Radiology. First semester (12 weeks). Prerequisite: DGRG 220.

DGRG 240  Clinical Practicum III  0.20; 4cr.

DGRG 250  Clinical Practicum IV  0.20; 2cr.
Clinical training in DSA/interventional (Digital Subtraction Angiography/Interventional), Breast Imaging, CT (Computed Tomography), U/S (Ultrasonography) and Imaging in the operating theatre. Summer (6 weeks). Prerequisite: DGRG 240.
DGRG 260  Clinical Practicum V  0.20; 4 cr.
Clinical training in Breast Imaging, CT (Computed Tomography), U/S (Ultrasonography) and MRI (Magnetic Resonance Imaging). First semester (12 weeks). Prerequisite: DGRG 250.

DGRG 270  Clinical Practicum VI  0.20; 4 cr.
Clinical training in CT (Computed Tomography), MRI (Magnetic Resonance Imaging) and NM/PET (Nuclear Medicine/Positron Emission Tomography). Second semester (12 weeks). Prerequisite: DGRG 260.

HUMR 246  Human Morphology  2.2; 3 cr.
An introduction to basic gross anatomy and histology. First semester.

PHYL 246  Physiology for Nursing Degree Students and Undergraduates  4.0; 4 cr.
A course that outlines fundamental principles of human physiology and the mechanisms governing the function of different body organs. Annually. Prerequisite: BIOL 201 or HUMR 246.

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| Lab (1)           | EPHD 203(3) |

| Research Project  | EPHD 213(3) |
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| Practical Training | DGRG 220 (2), 230 (4), 240 (4), 250 (2), 260 (4), 270 (4) |
| (20)              |            |

Undergraduate Catalogue 2014–15
Program of Medical Laboratory Sciences

Coordinator: Ramia, Sami
Professor: Ramia, Sami
Assistant Professors: Melhem, Nada; Yazbek, Soha
Instructor: Khatib, Rolla

This program is run in coordination with the Department of Pathology and Laboratory Medicine in the Faculty of Medicine.

The MLS program is designed to prepare students for a career in the profession of medical laboratory sciences by acquiring theoretical knowledge and practical skills in various disciplines of the specialty. Besides presenting theoretical knowledge, the program is dedicated to training students in the reliable performance of physical, chemical, and biological tests by utilizing routine and automated techniques. In addition, students are trained to develop the ability to interpret generated laboratory results and hence contribute to the diagnosis of disease. Continuing one’s education, and updating skills and knowledge, as well as medical professional ethics, are emphasized.

MLSP 201 Clinical Hematology I 3.0; 3 cr.
A course that introduces students to fundamental concepts in hematology, including the development of blood cell elements, normal physiology of blood cells, and their disorders. This course focuses on anemia, with a special emphasis on diagnosis. First semester.

MLSP 202 Clinical Hematology II 3.0; 3 cr.
A course that consists of lectures and demonstrations in hematology with emphasis on coagulation and hemostatic disorders, white blood cell anomalies, and leukemia. Second semester.

MLSP 203 General Microbiology 2.2; 3 cr.
A course that covers structure and morphology of micro-organisms, nutritional requirements and growth, sterilization and disinfection, introduction to microbial genetics, collection and handling of clinical specimens, culture techniques for clinical specimens and expected pathogens, antibiotic sensitivity testing, and assay. First semester.

MLSP 204 Systematic Bacteriology 2.4; 4 cr.
A course that covers the characteristics of bacteria of medical importance with concentration on the diseases they cause, pathogenesis, mode of transmission, control and methods for isolation, identification, and interpretation of results. Second semester.

MLSP 207 Immunology and Blood Banking 2.0; 2 cr.
A course that consists of lectures in basic immunology, including types of immune responses, cells of the immune response, antigens, antibodies, and complement system, as well as basic principles in blood banking and transfusion medicine. First semester.
MLSP 208  General and Diagnostic Virology  2.0; 2 cr.
An introduction to virology covering the general characteristics of viruses, their classification, mode of transmission, pathogenesis, and the diseases they cause in man, is the focus of the first part of this course. The second part emphasizes viral diseases of public health importance, including their epidemiology, control, and possible prevention. First semester.

MLSP 211  Seminar  1.0; 1 cr.
A seminar in which students are trained to read recently published scientific papers in medical journals, summarize, and present the information. This process also involves discussion and critiques of the presented manuscripts. Second semester.

MLSP 259  Diagnostic Serology  1.0; 1 cr.
An introduction to the principles of serologic reactions and laboratory techniques in the diagnosis of infectious diseases. Second semester.

Below are descriptions of the required courses offered by several departments at the Faculty of Medicine: Biochemistry, Microbiology and Immunology, Pathology and Laboratory Medicine, and Physiology.

BIOC 255  Biochemistry for MLSP  3.0; 3 cr.
The course provides an overview of structure, function, and metabolism of basic biological micro/macro molecules; a general review of the genetic makeup; and emphasizes the clinical relevance by correlating disease to basic information. The course is an introductory biochemistry course, offered to undergraduate students in the Medical Lab Sciences Program and related fields. Second semester.

LABM 201/202  Clinical Chemistry I and II  2.0/3.0; 2 /3 cr.
A pair of courses in which the main objective is to acquaint students with fundamentals of clinical chemistry, including various analytical procedures, instrumentation, and methods used for determination of clinical analytes. Correlation of laboratory results with clinical manifestation is also an integral part of these courses. These two courses cover all aspects of routine clinical chemistry testing, such as carbohydrates, electrolytes, acid-base balance, blood gases, nitrogen metabolites, proteins, enzymes, lipids and lipoproteins, calcium metabolism, liver function tests as well as some advanced topics (hormones, therapeutic drug monitoring, toxicology) and specialized techniques like chromatography (HPLC and GC/Ms). First and second semester respectively.

LABM 210  Cytology and Histological Techniques  2.0; 2 cr.
A course that includes a series of lectures and demonstrations on cell biology, a review of normal histology of various human organs, a description of examples of pathological changes, lectures on techniques of tissue handling, and preparation and staining of sections and smears for cytological material. Members of the department and the department of Human Morphology.

LABM 220  Clinical Chemistry and Endocrinology  0.20; 4 cr.
Practical experience in clinical chemistry and endocrinology. Eight weeks.

LABM 230  Clinical Hematology and Reception  4.20; 4 cr.
Practical experience in clinical hematology special procedures and reception area. Prerequisites: MLSP 201 and MLSP 202.
LABM 231  Clinical Laboratory Quality Systems 1.0; 1 cr.
This course is intended to give MLS students a thorough understanding of the quality systems as implemented in clinical laboratories with practical examples in order to relate theory to practice. The course includes all the basic elements and tools required to implement the quality system essentials across all phases of the laboratory workflow: pre-analytical, analytical, post-analytical.

LABM 233  Genetics and Molecular Biology 2.0; 2 cr.
A course that includes an introduction to human genetics, comprising the structure and function of DNA and the classification of genetic disorders. Diagnostic techniques in human genetics (cytogenetics, biochemical, and molecular) will be covered, as well as molecular techniques applied in pathology and microbiology.

LABM 235  Medical Mycology 1.0; 1 cr.
A course that covers the different kinds and types of fungi (yeast and mold). This course discusses their disease spectrum mode of infection, gross requirements, and cultural and non-cultural methods of identifications as well as antifungal drugs and susceptibility testing of fungi.

LABM 240  Clinical Microbiology 3.2; 4 cr.
Practical experience in clinical microbiology (aerobic and anaerobic bacteriology, mycobacteriology, mycology, and susceptibility testing). Eight weeks. Prerequisites: MLSP 203 and MLSP 204.

LABM 250  Clinical Parasitology and Urinalysis 1.5.20; 2 cr.
Practical experience in clinical microscopy pertaining to parasitology, urinalysis, and spermogram. Four weeks. Prerequisite: MBIM 223.

LABM 260  Serology 1.5.20; 2 cr.
Practical experience in clinical immunology and serodiagnostic techniques. Four weeks. Prerequisite: MLSP 259.

LABM 270  Blood Banking 1.5.20; 2 cr.
Practical experience in blood banking and transfusion medicine. Four weeks. Prerequisite: MLSP 207.

LABM 280  Cytogenetics, Molecular Diagnostics and Histotechniques 0.20; 2 cr.
Practical experience in reception, cytogenetics, and histotechniques. Four weeks. Prerequisite: LABM 210.

MBIM 223  Parasitology for MLS Students 2.2; 4 cr.
A diagnostic parasitology four credit course offered to MLSP junior students in spring semester of each academic year. The purpose of the course is to provide the basic principles and concepts of parasitic diseases and their laboratory diagnosis. Emphasis is placed on life cycles, pathogenesis, preventive measures and in-depth laboratory identification of the parasites. Second semester.

PHYL 246  Physiology for Nursing Degree Students and Undergraduates 4.0; 4 cr.
A course that outlines fundamental principles of human physiology and the mechanisms governing the function of different body organs. Prerequisite: BIOC 246 or BIOL 201. Annually.
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