

# Department of Pathology and Laboratory Medicine

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Assistant Professors:	El-Khoury, Riyad
Instructors:	Assaf, Nada; Jurdi, Nawaf; Aoun, Jessica; Sinno, Sara
Clinical Associates:	Salti, Ibrahim

The Department of Pathology and Laboratory Medicine offers courses to medical students and undergraduate courses to students in the Medical Laboratory Sciences program (Faculty of Health Sciences). The department also offers four-year residency training programs in Pathology and Laboratory Medicine.

## **IDTH 204      Basic Pathological Mechanisms      29.14; 2 cr.**

This course covers the basic and general pathological mechanisms of disease processes at the clinical, gross, cellular, and molecular levels. The course includes the topics of cellular adaptation to injury, cell death, acute and chronic inflammation, anti-inflammatory drugs, healing/repair and fibrosis, hemodynamic disorders, neoplasia, hereditary and clinical genetics, cancer chemotherapy and radiotherapy, and toxicology. The material covered in this course provides the foundations for the comprehensive organ system-based modules that are covered throughout the first two years of medical school (IDTH 203, 205, 211, 212, 225, 226, 227, 228, 229 and 230). These modules integrate clinical and pathologic aspects of multiple disease entities and are taught collaboratively between pathologists and colleagues from other clinical departments.

## **IDTH 221/222      Introduction to Medicine**

*See Department of Internal Medicine.*

## **PATH 260      Elective in Pathology      0.180.**

This one-month elective is open to Med IV students. The purpose of this elective is to expose students to the general principles of surgical pathology and cytopathology. During this rotation, the student will participate in the daily teaching activities of the department, learn basic dissection skills at the grossing bench, and learn histologic features of common pathologic processes during multi-headed microscope sign-out sessions. Additionally, the student is required to make a presentation on a topic of interest and is encouraged to participate in an investigative research project.

## **LABM 262      Elective in Laboratory Medicine      0.180-360.**

A clerkship offered to Med IV students. This clerkship consists of daily practical training, supplemented by lectures and seminars to cover the disciplines of clinical chemistry, clinical microbiology and immunology, clinical hematology, blood banking and transfusion medicine, molecular diagnostics and cytogenetics. This elective is

available in these various disciplines of laboratory medicine and may be adjusted according to the interest of the candidate. During the rotation, the student is required to make a presentation on a topic of interest and is encouraged to participate in an investigative research project. *One to two months.*

**LABM 287 Internship 0.180-360.**

Same as LABM 262. Offered to rotating interns. *One to two months.*

## Clinico-Pathology Conferences

Med III, IV, and staff in collaboration with the departments of Surgery, Internal Medicine, Pediatrics, Obstetrics and Gynecology, Diagnostic Radiology, and Otolaryngology-Head and Neck Surgery.

## Courses Offered for Medical Laboratory Sciences Students

**LABM 201/202 Clinical Chemistry I and II 2.0; 3 cr.**

Clinical Chemistry courses I and II are designed to acquaint students with the fundamentals of clinical chemistry, including basic physiological and biochemical processes, instrumentation, principles of analytical procedures, and methods used for reliable determination of clinical analytes. Correlation of laboratory results with clinical manifestation is an integral part of these courses. These courses cover all aspects of routine clinical chemistry such as carbohydrates, electrolytes, acid-base balance, blood gases, nitrogen metabolites, proteins, enzymes, lipids and lipoproteins, calcium metabolism and liver function. LABM 202 covers advanced clinical chemistry topics such as hormones, therapeutic drug monitoring, toxicology; and specialized techniques like chromatography (HPLC, GC/MS and so on).

**LABM 210 Cytology and Histological Techniques 24.16; 2 cr.**

A course that includes a series of lectures, demonstrations and hands on training on cell biology, a review of normal histology of various human organs, examples of pathological changes, lectures and hands-on-training on techniques of tissue handling, processing, sectioning and staining. Also covered is a study of sections and smears for cytological material. Department of Anatomy, Cell Biology and Physiological Sciences.

**LABM 220 Clinical Chemistry and Endocrinology 0.128; 4 cr.**

Practical experience in Clinical Chemistry that includes two parts. The covered manual procedures give students a thorough understanding of test principles and basic laboratory preparations and measurements. The clinical laboratory rotation covers all areas from specimen handling to overview of automated clinical chemistry analyzers and other specialized procedures such as serum and urine electrophoresis and amino acid analysis as well as patient test management. *Six weeks.*

**LABM 230 Clinical Hematology and Phlebotomy 0.128; 4 cr.**

Practical experience in clinical hematology and phlebotomy. This course covers technical aspects of diagnosis of hematological disorders including examination of peripheral blood smears and bone marrow aspirates. In addition, laboratory testing for the work-up of and monitoring of coagulopathies will be covered. The course also covers basic principles of phlebotomy and the recommendations to proper blood specimen collection and the choice of tubes for the respective tests in the clinical laboratory. *Six weeks.*

**LABM 231 Clinical Laboratory Quality Systems 1 cr.**  
 This course is intended to give Medical Laboratory Sciences students a thorough understanding of the quality systems used for implementation of total quality management in the clinical laboratories. The course covers all the basic elements and tools required to implement the quality system essentials across all phases of the laboratory workflow: preanalytical, analytical, postanalytical. In addition, it will include focused lectures related to quality and safety standards required in specialized areas such as blood bank, clinical microbiology and molecular diagnostics. Practical examples from the laboratory setting will be part and parcel of the lectures to help students relate theory to practice.

**LABM 233 Genetics and Molecular Biology 2.0; 2 cr.**  
 This course is an introduction to human genetics, comprising the structure and function of DNA and the classification of genetic disorders, as well as the application of laboratory genetic testing in the clinical differential diagnosis of a variety of disorders. Diagnostic techniques in human genetics (cytogenetics, biochemical and molecular) will be covered and their applications in pathology, oncology, immunology and microbiology will be reviewed. In addition, there will be learning of performing polymerase chain reaction (PCR) technique, real-time PCR, Sanger sequencing, and Next Generation Sequencing.

**LABM 235 Medical Mycology 1.0; 1 cr.**  
 A course that covers the different types of fungi, yeasts (e.g. *Candida*, *Cryptococcus*) and molds (e.g. dermatophytes, saprophytes, dimorphic). This course discusses their disease spectrum, mode of infection, growth requirements, and culture and non-culture methods of identification and diagnosis as well as antifungal drugs and susceptibility testing.

**LABM 240 Clinical Microbiology 0.128; 4 cr.**  
 Practical experience in clinical microbiology conventional, automated, and non-culture rapid testing. The diagnostic methods encompass: aerobic and anaerobic bacteria, mycobacteria, fungi, media preparation, quality control, specimen management, microbial identification, antimicrobial susceptibility testing and interpretation of findings, as well as the basic functions of automated instruments for microbial identification. *Six weeks.*

**LABM 250 Clinical Parasitology and Urinalysis 0.64; 2 cr.**  
 Practical experience covering conventional and automated approaches in clinical microscopy pertaining to parasitology, urinalysis, spermogram, occult blood, calprotectin lactoferrin, Sudan III fat in stool, Acid Fast stain for coccidian parasites and RBC morphology, as well as in the use of different types of microscopic methods for diagnosing particulate material in synovial fluid and others. Prerequisite: MBIM 223. *Three weeks.*

**LABM 260 Serology 0.64; 2 cr.**  
 Practical experience in clinical immunology and various automated and manual serodiagnostic techniques used for the diagnosis of infectious (viral, bacterial, & fungal) and non-infectious diseases (e.g. autoimmune, allergies). *Three weeks.*

