

# **FACULTY OF HEALTH SCIENCES**

## **MISSION STATEMENT**

The mission of the Faculty of Health Sciences is to nurture a lively collegial learning environment that would enable students to become caring and capable healthcare professionals and citizens ready to engage effective roles within healthcare systems, families and communities. This entails the continuous development of academic, co-academic, research, and service programs that are integrated, scientifically sound, socially appropriate, multidisciplinary, and impact-directed.

Guided by the principles and policies of the University of Balamand, and working in partnership with St. George Hospital University Medical Center, the Faculty seeks excellence, fosters professionalism, rewards commitment, encourages service, emphasizes professional ethics, nurtures partnerships, values research, and respects intellectual property.

# **FACULTY LIST**

## **OFFICERS OF THE FACULTY**

Salem, Elie	President of the University
Bashour, Tali'	Honorary Vice President for Medical Affairs in the US
Karam, Nadim	Vice President for Health Affairs and Community Development, Dean
Nahas, George	Vice President for Planning and Educational Relations
Najjar, Michel	Vice President for Development Administration and Public Relations
Moubayed, Walid	Dean of Admissions and Registration
Ayoub, Olga	Librarian

## **FACULTY STAFF**

Atallah, David	IT Assistant
Chaddad, Rita	Secretary
Constantine, Catherine	Secretary
Kahale, Lara	Secretary
Khalil, Mayssa	Secretary
Khamis, Youssef	Office Assistant
Khater, Paul	IT Supervisor
Lahoud, Cecile	Secretary
Nseir, Micheline	Administrative Assistant

## **FACULTY MEMBERS**

Abboud, Johnny	M.D., Cardiology, St. Joseph University, Lebanon.
Abdallah, Bahia	M.P.H., Health Services Administration, American University of Beirut, Lebanon.
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Abi Habib, Rudy	Ph.D., Clinical Psychology, Université de Paris VII, France.
Abi Khalil, Nancy	DEA, French Literature, Lebanese University, Lebanon.
Abi Rached, Roger	B.A., Law, Sagesse University, Lebanon.
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Abou Mrad, Jean	M.S., International Business, Point Park College, U.S.A.
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Arafa, Mazen	B.A., Accounting and Auditing, Lebanese University, Lebanon.
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Hokayem, Najate	M.S., Marketing of Services, Université Francois-Rabelais, France.

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Kanaan, Maya	M.B.A., Hospital Management, Sagesse University, Lebanon.
Karam, Lina	Ph.D., Polymer Chemistry and Material Sciences, University of Sciences and Technology, Montpelleir, France.
Karam, Nadim	M.D., American University of Beirut, Lebanon. M.P.H. Johns Hopkins University, USA.
Karam, Sabine	M.D., St. Joseph University, Lebanon.
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Mady, Christine	Ph.D., City and Regional Planning, Cardiff University, U.K.
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Makrous, Dina	Diplome en Sage femme, Lebanese University, Lebanon
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Mokbel, Nancy	Ph.D., Molecular Biology and Biochemistry, University of Sidney, Australia.
Mounayar, Mayada	M.A., History, University of London. England.
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Muallem, Hind	Ph.D., Molecular and Cellular Pathology, University of North Carolina and Chapel Hill, U.S.A.
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Serhan, Mireille	Ph.D., Food Engineering and Biotechnology, National Polytechnic Institute of Lorraine, France.
Srour, Maya	M.S., Environmental Sciences,

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Tannous, Tony	Ph.D., Physical Optics, Sydney University, Australia.
Tawk, Lina	Ph.D., Health Sciences, Université de Montpelleir, France.
Zgheib, Georges	M.D., Holy Spirit University, Lebanon. M.S., Human Nutrition, American University of Beirut, Lebanon. M.S., Hospital and Health Management, Ecole Supérieure des Affaires, Lebanon.





Graduate acceptance is granted upon recommendation of the Graduate Admission Committee after reviewing the application.

The Graduate Admission Committee may admit students on probationary status based on their presented credentials. A student admitted on probation must achieve a minimum average of 80 in the first semester of graduate study provided that the student enrolls in a minimum of six credits. Failure to satisfy these requirements will result in automatic dismissal from the graduate program.

Students admitted on probation due to unsatisfactory undergraduate achievements may be allowed to enroll in remedial courses to improve their undergraduate cumulative average and reapply for admission to the graduate program.

## **2. ACADEMIC RULES & REGULATIONS**

Refer to the University rules and regulations.

**MASTER OF SCIENCE IN CLINICAL LABORATORY  
SCIENCES  
CLINICAL MICROBIOLOGY CONCENTRATION**

**SEMESTER 1**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 301	Laboratory Organization, Management, and Quality Assurance	3
CLAS 303	Applied Molecular Biology	3
CLAS 321	Medical Microbiology	3
<b>Total</b>		<b>9</b>

**SEMESTER 2**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 304	Research Methods	3
CLAS 306	Fundamentals of Pathology & Laboratory Diagnostics	4
CLAS 310	Advanced Principles of Immunology	3
<b>Total</b>		<b>10</b>

**SEMESTER 3**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 399	Master's Thesis	6
	Elective	3
<b>Total</b>		<b>9</b>

**SEMESTER 4**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 323	Infection Control in Clinical Practices	2
CLAS 399	Thesis Continued	-
<b>Total</b>		<b>2</b>
<b>Total credits</b>		<b>30</b>

## **DIAGNOSTIC MOLECULAR BIOLOGY CONCENTRATION**

### **SEMESTER 1**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 301	Laboratory Organization, Management, and Quality Assurance	3
CLAS 303	Applied Molecular Biology	3
CLAS 308	Biotechnology	3
		9
<b>Total</b>		<b>9</b>

### **SEMESTER 2**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 304	Research Methods	3
CLAS 306	Fundamentals of Pathology & laboratory diagnostics	4
CLAS 331	Genomics and Proteomics	3
		10
<b>Total</b>		<b>10</b>

### **SEMESTER 3**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 399	Master's Thesis	6
	Elective	3
		9
<b>Total</b>		<b>9</b>

### **SEMESTER 4**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 334	Human Genetics	2
CLAS 399	Thesis Continued	-
		2
<b>Total</b>		<b>2</b>
<b>Total credits</b>		<b>30</b>

# **PROFESSIONAL MASTER IN LABORATORY SCIENCES**

## **LABORATORY MANAGEMENT**

### **SEMESTER 1**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 301	Laboratory Organization, Management, and Quality Assurance	3
CLAS 351	Database management & Laboratory Information Systems	3
CLAS 357	Laboratory Set up & Equipement Technology	3
		<hr/>
<b>Total</b>		<b>9</b>

### **SEMESTER 2**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 306	Fundamental of Pathology and laboratory diagnostics	4
CLAS 323	Infection Control in Clinical Practices	2
CLAS 353	Laboratory Human Resource Management	3
		<hr/>
<b>Total</b>		<b>9</b>

### **SEMESTER 3**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 352	Laboratory Quality management systems	3
	Elective	3
		<hr/>
<b>Total</b>		<b>6</b>

### **SEMESTER 4**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 354	Laboratory Budgeting and Finance	3
CLAS 355	Laboratory Marketing Strategies	3
		<hr/>
<b>Total</b>		<b>6</b>

### **SEMESTER 5**

<b><u>Course Code</u></b>	<b><u>Course Title</u></b>	<b><u>Credit</u></b>
CLAS 350	Internship	4
		<hr/>
<b>Total</b>		<b>4</b>

**Total credits** **34**

## **COURSE DESCRIPTIONS**

### **CLAS 301 LABORATORY ORGANIZATION, MANAGEMENT, AND QUALITY ASSURANCE**

**3.0: 3 cr. E**

This course targets clinical laboratory scientists who have an interest or responsibility in technical quality management of laboratory testing processes, as well as managers of healthcare laboratories, clinical QC technologists and specialists, laboratory inspectors, and others. The course enables students to develop managerial skills, to acquire knowledge of total quality management, to be able to assume administrative responsibility in any laboratory setting.

### **CLAS 303 APPLIED MOLECULAR BIOLOGY**

**3.0: 3 cr. E**

This course is designed to introduce major molecular biology techniques used in diagnosis and prediction of risk in clinical laboratories. In addition to an overview of the basic techniques in molecular diagnostics, the course examines advanced techniques in areas such as DNA identity, applications in hematology, applications in infectious diseases, and other diagnostic tools in a number of common genetic disorders. The course includes 1 cr. of hands-on applications of various introduced techniques.

### **CLAS 304 RESEARCH METHODOLOGY**

**3.0: 3 cr. E**

This course is an introduction to the research process in clinical and laboratory sciences and the various steps, methods, strategies and procedures associated with it. The course is designed to equip students with the necessary skills to design, undertake and disseminate basic and clinical research.

### **CLAS 306 FUNDAMENTALS OF PATHOLOGY & LABORATORY DIAGNOSTICS**

**4.0: 4 cr. E**

This course is divided into 2 sections. Section I covers fundamentals of pathology covering basics of disease etiology, and mechanisms of disease development. Topics covered in this section include cellular injury, cell death, inflammation, tissue repair, and neoplasia. Section II introduces pathology of select organs with a focus on laboratory diagnostic tests and clinical interpretations of Laboratory test results for corresponding diseased organs and organ systems. This sections details clinical findings in chemistry, serology, endocrinology, microbiology, genetics, and body fluid analysis.

### **CLAS 307 MEDICAL STATISTICS**

**3.0: 3 cr. E**

This course provides an introduction to the basic principles and applications of biostatistics and epidemiology, as they are applied to problems in clinical and public health settings. Topics cover a wide range from simple descriptive statistics and presentation of data, to principles of hypothesis testing, and an introduction to linear and logistic regression and non-parametrical tests. Lectures, problem sets, and computer output are used to develop these and additional concepts. Furthermore, important epidemiological concepts in evaluation of epidemiological findings such as confounding, effect measure modification, and measures of attribution of disease burden to specific exposures are also presented.

### **CLAS 308 BIOTECHNOLOGY**

**3.0: 3 cr. E**

The course is an advanced course on biotechnology focusing on the genetic, cell transfection and recombinant DNA technology principles and processes involved in biotechnology. Included are processes involved in cell culture and the bioprocess of prokaryotic/eukaryotic cells. The course also covers important medical applications of biotechnology.

**CLAS 310 ADVANCES IN IMMUNOLOGY****3.0: 3 cr. E**

This course provides depth knowledge of the cellular and molecular aspects of immune cells development and its involvement in health and infectious disease and allergy. The course will explore the cellular and molecular aspects of immune cells development, antigen presentation and recognition, cell-cell- interaction, and other aspect of immune system that are required for for a functional and effective immune immune response. Recent advances will be highlighted from current scientific literature, especially experimental discoveries relevant to microbial immune regulatory mechanisms, signalling pathways, as well as activation and function.

**CLAS 321 MEDICAL MICROBIOLOGY****3.0: 3 cr. E**

This course introduces microbes from a medical and ecological perspective with a focus on the clinical behavior of pathogens to humans. The course is divided into 2 major sections. Section I covers principles of general microbiology with special emphasis on microbial structure, classification, and interaction with the human host. Section II offers an overview of infectious diseases classified by systemic infections, with an emphasis on mechanisms of infectious characteristics of each studied microorganism.

**CLAS 322 ANTIMICROBIAL AGENTS & MECHANISMS OF MICROBIAL RESISTANCE****3.0: 3 cr. E**

This course provides a solid foundation for understanding the basis and the development of antimicrobial resistance. The course covers bacterial resistance mechanisms against antibacterial agents, antiviral, antifungal, and antiparasitic drugs. Topics covered also include effects of resistant microorganisms on treatment, as well as their impact on public health.

**CLAS 323 INFECTION CONTROL IN CLINICAL PRACTICES****2.0: 2 cr. E**

This course provides a comprehensive guide to the principles and practices of infection control and prevention, in addition to the basic elements of microbiology and epidemiology that underlies them. The course offers an evidence-based overview of routine and latest infection control practices, as well as isolation techniques.

**CLAS 324 CASE STUDIES IN MICROBIOLOGY****3.0: 3 cr. E**

This course deals with the diagnostic and clinical aspects of infectious diseases. It takes the students from the bedside to the lab setting exposing them to both patient examination and laboratory procedures. It entails the involvement of the students in ward visits and lab work. A weekly case presentation and discussion is done and evaluated.

**CLAS 335 CANCER GENETICS****1.0: 1 cr. E**

The course presents fundamentals of cancer biology and angiogenesis. Understanding of correlations of molecular biology and chromosomal change in human cancer and the role of genetic change in progression and metastasis of cancer.

**CLAS 336 GENOMICS****3.0: 3 cr. E**

The course main objective is to acquire knowledge about gathering and analyzing genomic data. The course introduces research methods used to accumulate genomic data, instruct on how to access major genomic databases, how various nucleotide alignment algorithms work, and how to use such data. The course is an introduction to theory and methods used for genome-level sequence analysis. It uses public databases and software to extract, analyze and interpret DNA sequences. Topics covered include functional and structural homology, and analysis of gene expression patterns using gene chip technology.

**CLAS 337 PROTEOMICS****2.0: 2 cr. E**

The course aims to introduce latest techniques used to analyze proteins and provide the student with comprehensive and practical tools used for this purpose, especially in the ever-growing list of code sequences, patterns, three dimensional structures, and the general flow of information from gene to transcript to protein. The course is designed to provide students with knowledge of bioinformatics as a tool for understanding the biological context of proteins from their structure, homology and function predictions till the experimental linking prediction to true function.

**CLAS 338 CLINICAL GENETICS****3.0: 3 cr. E**

The course aims at introducing hot topics in clinical genetics such as genetic diseases, human karyotype technology, chromosomal abnormalities detection, human allelic disorders, and others. The course also includes 1 credit of clinical rotations in Cytogenetics & Molecular Biology.

**CLAS 350 LABORATORY MANAGEMENT INTERNSHIP****4.0: 4 cr. E**

A supervised professional training and experience in an actual laboratory setting. The internship provides the student with hands-on training in lab finance and budgeting, implementation of quality management, database and information systems, and management skills; as well as developing personal managerial and leadership skills. Each student is expected to complete a minimum of 4 months (8 hours/day), under the supervision of a Faculty advisor. This is an essential course in the major, and students must have the permission of the student's advisor to enroll.

**CLAS 351 DATABASE MANAGEMENT & LABORATORY INFORMATION SYSTEMS** **3.0: 3 cr. E**

This course provides student with a practical understanding of health care information systems to use and develop in a laboratory setting. The course includes analysis and discussion of actual case examples. In addition, the course emphasizes on developing and evaluating new tools to analyze clinical data resources. Case studies involving the development and assessment of databases for disease management and drug utilization will be covered. Students learn how to collect, summarize, statistically analyze, present, and interpret data.

**CLAS 352 LABORATORY QUALITY MANAGEMENT SYSTEMS****3.0: 3 cr. E**

This course provides information on developing quality management systems for laboratory services. Students taking this course will learn to develop resources required for implementing a quality management system. In addition, the course focuses on developing and managing the processes required for producing and communicating examination results.

Prerequisite: CLAS 301

**CLAS 353 LABORATORY HUMAN RESOURCE MANAGEMENT****3.0: 3 cr. E**

Human resource management is concerned with effective management and utilization of human resources in organizations. This course introduces concepts in management of human resources with a focus on laboratory. Topics covered include, mainly, analyzing various methods for recruitment, staffing and retention, staff development, and evaluating performance to various job levels in a laboratory.

**CLAS 354 LABORATORY BUDGETING AND FINANCE****3.0: 3 cr. E**

This course introduces the student to the principles of accounting, and focuses on the use of accounting data to support managerial decision-making. Students will acquire skills in using spreadsheets to develop and monitor operating budgets in a laboratory setting. Concepts including cost allocation, personnel costs, activity based cost accounting, demand ratios, and fixed and variable costs, are all examined. Techniques for break-even analysis are presented, and budget negotiation skills and basic decision models are introduced.



**CLAS 355 LABORATORY MARKETING STRATEGIES****3.0: 3 cr. E**

This course introduces the student to the principles of marketing, and focuses on the use of marketing plans. Students will acquire skills in customer service, branding and imaging. Concepts including how to develop a marketing strategy and how to organize branding value in laboratory setting are examined. The concept of organizational communication systems is introduced.

**CLAS 356 STRATEGIC PLANNING****3.0: 3 cr. E**

This is a graduate course designed to prepare students to be senior managers for the increasingly competitive business world. The emphasis of this course will be on the strategic analyses, decisions, and actions that organizations take to create sustainable competitive advantages, with the consideration of both the internal condition and the external environment. Through chapters, readings, and case analyses, the course will discuss issues related to laboratory ethical decision making, corporate social responsibility, stakeholder theory, and the relationship of business & government.

**CLAS 357 MANAGING LABORATORY EQUIPMENT AND SET UP****3.0: 3 cr. E**

The “Managing Laboratory Equipment and Set up” course develops the basic concepts and understanding of Laboratory Equipment and its technology. Nowadays, all Laboratory daily activities are processed on Medical Equipment, which makes essential to understand their basics of operations. This will fortify the student practical knowledge and prepare him/her for future challenges in his/her career.

**CLAS 399 MASTER’S THESIS****6 cr. E**

This course consists of a thorough supervised research project whereby a student formulates a research hypothesis with specific objectives, then develops methods to demonstrate his/her hypothesis. Results from the performed study are submitted in the form of a thesis to an examination committee, and are defended in public.

## **MASTER DEGREE IN PUBLIC HEALTH (MPH)**

The mission of the MPH Program at the Faculty of Health Sciences (FHS) is to prepare graduates and practitioners for effective engagement and leadership in promoting the health of communities, eliminating social and health disparities, and achieving health-sustaining environments in Lebanon and across the Middle East.

The MPH is a 42-credit professional (practicum-based) degree, designed to be completed within 1.5 to 2 years for full-time students, and within 4 years on a part-time basis.

\* The Program is structured to have a set of core courses (21 credits), a set of concentration-specific courses (15 credits), and a practicum (6 credits).

\* For a full-time Program enrollment of 2-year duration, credits are distributed as follows: 12 credits in Fall 1, 12 credits in Spring 1, 12 credits in Fall 2, and 6 credits in Spring 2.

The Program currently offers a MPH degree with one area of concentration in the field of Community Health.

### **Core Courses (21 credits):**

Core courses are designed to provide in-depth training in the 5 core areas of public health knowledge: Biostatistics, Epidemiology, Environmental Health Sciences, Health Services Administration, and Social and Behavioral Sciences. Other courses, identified as highly important for a career in public health, are also included within the MPH core courses. The total number of “core” credits is 21. A list of the core courses is provided below.

- Epidemiology (3 credits)
- Biostatistics (3 credits)
- Environmental Health (3 credits)
- Health Care Management (3 credits)
- Social and Behavioral Determinants of Health (3 credits)
- Research Design (3 credits)
- Public Health Ethics (1 credit; topic will also be integrated across other courses)
- Public Health Policy, Law and Advocacy (2 credits)

### **Concentration Courses (15 credits):**

These include 12 credits of coursework related to the Community Health area of concentration, in addition to a 3-credit directed elective.

- Community Health Assessment (3 credits)
- Community Program Planning, Implementation, Monitoring and Evaluation (3 credits)
- Basic Theories of Health Promotion (3 credits)
- Key issues in Community Health (3 credits)
- Directed elective (3 credits)

### **Practicum (6 credits):**

The practicum is designed to provide students with hands-on exposure to public health practice, and to allow them to apply competencies acquired through the Program, in a field work that approximates professional

practice. Students have the opportunity to apply learned theory, to contribute to addressing a public health issue while contributing to a community's resources, and to develop personal confidence, skills and ethical behavior as a public health professional.

Prerequisite: All core and concentration courses must be successfully completed before taking the practicum. The student must obtain approval of the Program before commencing.