

BACHELOR IN MEDICAL LABORATORY ANALYSIS

Main Language of Instruction:

French ☒ English ☐ Arabic ☐

Campus Where the Program Is Offered: CSM

OBJECTIVES

The Bachelor in Medical Laboratory Analysis aims to train technicians who conduct analyses on biological samples to diagnose conditions or monitor treatment effectiveness, under the supervision of the head of the laboratory.

PROGRAM LEARNING OUTCOMES (COMPETENCIES)

C1: Developing a professional identity and engaging in training.

C2: Collaborating with various stakeholders within a multidisciplinary team while adhering to ethical and professional standards.

C3: Planning and performing activities specific to the biomedical sciences domain.

C4: Ensuring professional communication.

PROGRAM REQUIREMENTS

180 credits: Required courses (162 credits), Institution's elective courses (12 credits), Open elective courses (6 credits) and USJ General Education Program (30 credits - may be part of the above categories).

Fundamental Courses (174 Cr.)

Required Courses (162 Cr.)

Addictive Behaviors and Dependencies (2 Cr.), Analytical Chemistry (1 Cr.), Applied Pathological Anatomy (2 Cr.), Arabic Language and Media (2 Cr.), Bacteriology Internship I (2 Cr.), Bacteriology Internship II (2 Cr.), Bacteriology Internship III (2 Cr.), Biochemistry Internship I (2 Cr.), Biochemistry Internship II (2 Cr.), Blood Bank Internship (2 Cr.), Cellular Biology (2 Cr.), Clinical Biochemistry (3 Cr.), Communication and Conflict Management (2 Cr.), Communication and Human Relations (2 Cr.), Computer Science (2 Cr.), Cytogenetics and Molecular Biology Internship (1 Cr.), Endocrinology (2 Cr.), English (4 Cr.), Final Year Thesis (5 Cr.), First Aid (2 Cr.), Fundamental Ethics (2 Cr.), Fundamentals of Pharmacology (2 Cr.), General Biology (2 Cr.), General Chemistry + PW (3 Cr.), General Chemistry Practical Work (1 Cr.), Genetics (3 Cr.), Health Sociology (2 Cr.), Hematology (3 Cr.), Hematology Internship I (2 Cr.), Hematology Internship II (2 Cr.), Hematology Internship III (2 Cr.), Histology (2 Cr.), Histology Internship (1 Cr.), Hormonology Internship (2 Cr.), Human Anatomy and Physiology I (4 Cr.), Human Anatomy and Physiology II (4 Cr.), Hydrology (1 Cr.), Hygiene (2 Cr.), Immunology + Pathology + Practical Work (4 Cr.), Immunology Internship I (2 Cr.), Immunology Internship II (2 Cr.), Inorganic Chemistry (1 Cr.), Internship Validation III (1 Cr.), Introduction to Public Health (3 Cr.), Leadership and Work Ready Now (2 Cr.), Learning Through Clinical Cases (2 Cr.), Mathematics (2 Cr.), Medical Biotechnology (2 Cr.), Medical Laboratory Internship I (1 Cr.), Medical Laboratory Internship II (4 Cr.), Metabolic Biochemistry (4 Cr.), Microbial World (3 Cr.), Molecular Biology + Practical Work (4 Cr.), Organic Chemistry (3 Cr.), Parasitology Internship (2 Cr.), Parasitology - Mycology + Practical Work (4 Cr.), Pathological Anatomy Internship (2 Cr.), Physics (2 Cr.), Positive Communication (2 Cr.), Professional Integration Internship I + Validation I (4 Cr.), Professional Integration Internship II + Validation II (5 Cr.), Research Methodology (2 Cr.), Special Microbiology (3 Cr.), Statistics (2 Cr.), Structural Biochemistry (3 Cr.), USJ Values in Daily Life (2 Cr.), Virology (2 Cr.), Volunteering and Civic Action (2 Cr.).

Institution's Elective Courses (12 Cr.), to be chosen from the list below:

Creativity in Sustainable Development (2 Cr.), Introduction to Food Safety (2 Cr.), Laboratory Quality Assurance (1 Cr.), Medical Waste Management (1 Cr.), Nursing Care Tools (2 Cr.), Speaking/Writing for Effective Communication (2 Cr.), Therapeutic Dietetics (2 Cr.), Innovation (2 Cr.), Psychology (2 Cr.), Phytotherapy and Aromatherapy (2 Cr.),

Open Elective Courses (6 Cr.)



USJ General Education Program (30 Cr.)

Code	Course Name	Credits
	ENGLISH OR OTHER LANGUAGE	4
041ANGLL3	English	4
	ARABIC	2
	<i>Arabic Language and Culture</i>	2
435LALML2	Arabic Language and Media	2
	HUMANITIES	8
064VALEL1	USJ Values in Daily Life	2
	<i>Ethics</i>	2
018EPFPL2	Fundamental Ethics	2
	<i>Civic Engagement and Citizenship</i>	2
015ABC2L3	Volunteering and Civic Action	2
	<i>Other Humanities Course</i>	2
016GETCL2	Conflict Management and Resolution	2
	SOCIAL SCIENCES	6
	<i>Professional Integration and/or Entrepreneurship</i>	2
041LWRNL6	Leadership and Work Ready Now	2
	<i>Other Social Sciences Courses</i>	4
004EVENI2	Creativity in Sustainable Development	2
004SOLOI2	Health Sociology	2
	COMMUNICATION TECHNIQUES	4
041CUGEL1	Communication and Human Relations	2
041EXCOL1	Speaking/Writing for Effective Communication	2
	QUANTITATIVE TECHNIQUES	6
041INFOL1	Computer Science	2
004MATTL1	Mathematics	2
041STATL1	Statistics	2

SUGGESTED STUDY PLAN

Semester 1

Code	Course Name	Credits
435LALML2	Arabic Language and Media	2
004BICLL1	Cellular Biology	2
041INFOL1	Computer Science	2
004CHGEL1	General Chemistry + PW	3
041TPCGL1	General Chemistry Practical Work	1
004GENEI1	Genetics	3
041SHEML2	Hematology Internship I	2
004SANEI2	Hygiene	2
004CHIOI1	Inorganic Chemistry	1

004MATTL1	Mathematics	2
041SITLL1	Medical Laboratory Internship I	1
041PHYSL1	Physics	2
041STATL1	Statistics	2
064VALEL1	USJ Values in Daily Life	2
	Institution's Elective Course	2
	Total	29

Semester 2

Code	Course Name	Credits
041SBACL1	Bacteriology Internship I	2
016GETCL2	Communication and Conflict Management	2
041CUGEL1	Communication and Human Relations	2
004BIOGL1	General Biology	2
004SOLOI2	Health Sociology	2
041HISTL2	Histology	2
041STHIL2	Histology Internship	1
004ANPHL2	Human Anatomy and Physiology I	4
041CORGL2	Organic Chemistry	3
041SIP1L2	Professional Integration Internship I + Validation I	4
004BIOMI2	Structural Biochemistry	3
	Institution's Elective Course	2
	Open Elective Course	2
	Total	31

Semester 3

Code	Course Name	Credits
041ANGLL3	English	4
041HEMAL3	Hematology	3
041STHEL3	Hematology Internship II	2
004ANAPL3	Human Anatomy and Physiology II	4
004LEMII3	Microbial World	3
004MOLBI3	Molecular Biology + Practical Work	4
041STPML3	Parasitology Internship	2
004PAMYS1	Parasitology - Mycology + Practical Work	4
017CPOS1	Positive Communication	2
	Institution's Elective Course	2
041DITHL3 or 041INOVL3	Institution's Elective Course: Therapeutic Dietetics or Innovation	2
	Total	30

Semester 4

Code	Course Name	Credits
041CHANL4	Analytical Chemistry	1
041APAPL4	Applied Pathological Anatomy	2
041SBATL4	Bacteriology Internship II	2
041STBIL4	Biochemistry Internship I	2
041SCBIL4	Cytogenetics and Molecular Biology Internship	1
004IPEAS2	Immunology + Pathology + Practical Work	4
041STIML4	Immunology Internship I	2
004BIOMS2	Metabolic Biochemistry	4
041SIP2L4	Professional Integration Internship II + Validation II	5
041MISPL4	Special Microbiology	3
	Open Elective Course	2
	Total	30

Semester 5

Code	Course Name	Credits
004LCADS1	Addictive Behaviors and Dependencies	2
041SBAHL5	Bacteriology Internship III	2
041SHMHL5	Blood Bank Internship	2
004SBLGS3	Clinical Biochemistry	3
041ENDOL5	Endocrinology	2
004SECOS3	First Aid	2
041SHIHL5	Hematology Internship III	2
041SIMML5	Immunology Internship II	2
496IESPM1	Introduction to Public Health	3
041TDSIL5	Learning Through Clinical Cases	2
004BITHS1	Medical Biotechnology	2
041SALML5	Medical Laboratory Internship II	4
041CPAML5	Research Methodology	2
	Total	30

Semester 6

Code	Course Name	Credits
041STBHL6	Biochemistry Internship II	2
041MMFEL6	Final Year Thesis	5
018ETHIL1	Fundamental Ethics	2
041PHARL6	Fundamentals of Pharmacology	2
041SHORL6	Hormonology Internship	2
004HYDOS2	Hydrology	1

041VST3L6	Internship Validation III	1
041LWRNL6	Leadership and Work Ready Now	2
041SAPHL6	Pathological Anatomy Internship	2
004VIROS4	Virology	2
015ABC2L3	Volunteering and Civic Action	2
041SQLTL6 041GRCML6 or 041SEALL6 or 004PHYTS4	Institution's Elective Courses: Laboratory Quality Assurance And Medical Waste Management or Introduction to Food Safety or Phytotherapy and Aromatherapy	4
	Open Elective Course	2
	Total	30

COURSE DESCRIPTION

004LCADS1 Addictive Behaviors and Dependencies 2 Cr.

At the end of this course, students will be able to:

- Identify the mechanisms involved in dependence on psychoactive substances.
- Recognize the toxic effects induced by the main drugs (cannabis, opioids, cocaine, amphetamines, GHB, etc.).
- Recognize the main substances used in sports doping and their toxic effects on the body.
- Report on the experience of specialized physicians (psychiatrists, emergency physicians) as well as representatives of NGOs involved in the treatment of and fight against drug use and addiction in Lebanon.

041CHANL4 Analytical Chemistry 1 Cr.

This course aims to provide practical knowledge of quantitative analytical methods—including assays of pharmaceuticals, heavy metals, and pesticides—while developing competencies across the full spectrum of instrumental chemical analysis and ensuring performance through quality assurance.

435LALML2 Arabic Language and Media 2 Cr.

This course introduces Modern Standard Arabic (MSA) through an interactive approach combining language learning, cultural awareness, and the development of critical thinking.

In this track, media serve as a gateway to the Arabic language and to a deeper understanding of the contemporary Arab world. Drawing on a variety of authentic materials, including newspapers, audiovisual and social media, and digital content, students explore major issues and debates shaping contemporary Arab societies.

The course aims to develop students' skills in comprehension and expression in MSA. It also encourages critical engagement with media discourse and reflection on the role of media in contemporary societies.

41APAPL4 Applied Pathological Anatomy 2 Cr.

This course is designed to provide students with theoretical knowledge and practical skills in performing technical procedures in anatomical pathology and cytology, under the guidance of the supervising physician.

041SBACL1 Bacteriology Internship I 2 Cr.

This laboratory training is designed to equip students with the knowledge and competencies necessary to perform microbiological analyses of biological specimens.

041SBATL4 Bacteriology Internship II 2 Cr.

This laboratory training is designed to explore the major bacterial families of medical relevance, identify them through rapid diagnostic techniques, and assess their antibiotic susceptibility or resistance.

041SBAHL5	Bacteriology Internship III	2 Cr.
------------------	------------------------------------	--------------

This internship in a hospital laboratory is designed to develop the knowledge and skills students need to conduct bacteriological analyses in full compliance with standardized practices.

041STBIL4	Biochemistry Internship I	2 Cr.
------------------	----------------------------------	--------------

These biochemistry practical works emphasize biomolecule quantification and the characterization of their chemical properties. The primary goal is to bridge theory with practice, allowing students to deepen their understanding of analytical methods in biological chemistry and serum assays. Special emphasis is placed on enzymatic reaction kinetics, including the determination of reaction constants and rates. The course also covers biochemical assay methods and the application of automated analyzers.

041STBHL6	Biochemistry Internship II	2 Cr.
------------------	-----------------------------------	--------------

This internship in a hospital laboratory aims to develop the knowledge and skills students need to carry out biochemical analyses in compliance with international practices and standards.

041SHMHL5	Blood Bank Internship	2 Cr.
------------------	------------------------------	--------------

This internship in a hospital blood bank aims to develop the knowledge and competencies students need to perform analyses in transfusion medicine in full compliance with standardized transfusion practices.

004BICLL1	Cellular Biology	2 Cr.
------------------	-------------------------	--------------

This course offers an in-depth study of the cell, the fundamental unit of life, to provide essential knowledge in cell biology and an understanding of biological and metabolic processes.

Structured into seven chapters, the course progressively enables students to acquire a comprehensive understanding of cellular organization, structure, and function.

It provides an essential foundation for understanding the role of nutrients, interpreting biological analyses, and understanding certain pathologies.

The first chapters address the organization of living systems, molecular components, and different cell types. The following chapters focus on the plasma membrane, cellular exchanges, and interactions with the extracellular environment. The nucleus, the cell cycle, and regulatory mechanisms are also examined. Finally, the course explores intracellular organelles and those involved in energy and metabolic processes, such as mitochondria and chloroplasts.

004SBLGS3	Clinical Biochemistry	3 Cr.
------------------	------------------------------	--------------

This course enables students to:

- Evaluate physiological and pathological biochemical parameters, including metabolic regulation (carbohydrates, lipids, proteins), liver and kidney function, electrolyte and calcium balance, and blood gases.
- Identify normal biochemical values, physiological variations, and major abnormalities.
- Select and apply biochemical assays, recognize interferences, interpret results, assess key biomarkers (including cardiac and tumor markers), and provide clinical and biological guidance for diagnosis and prevention.
- Understand major diseases, their risk factors, and diagnostic approaches (biochemical, biological, and molecular), including metabolic, cardiovascular, hepatic, renal, and oncological disorders, as well as electrolyte and acid-base imbalances.

041CUGEL1	Communication and Human Relations	2 Cr.
------------------	--	--------------

By the end of this course, students will be able to:

- Recognize and demonstrate better self-awareness.
- Strengthen existing interpersonal relationships.
- Build more meaningful interpersonal relationships.
- Create an environment conducive to effective communication and better relationships with colleagues, supervisors, instructors, etc.
- Express their personality without provoking hostility while earning respect.
- Develop motivation and a desire to learn.

041INFOL1	Computer Science	2 Cr.
------------------	-------------------------	--------------

This course is designed to help students build the knowledge and skills needed to effectively communicate in the language of computing.

016GETCL2	Conflict Management and Resolution	2 Cr.
------------------	---	--------------

This course enables students to understand the different stages of conflict management by viewing conflicts not as obstacles, but as opportunities for personal and professional growth. It provides students with practical tools and effective conflict-resolution techniques, while fostering skills in constructive communication and nonviolent approaches. The course thus aims to strengthen students' ability to intervene constructively in situations of tension, both within educational settings and in their everyday lives.

004EVENI2	Creativity in Sustainable Development	2 Cr.
------------------	--	--------------

This course introduces the principles of sustainable development and explores their applications in the field of health, with particular emphasis on contemporary crises. It highlights the complex interactions between environmental and health systems and encourages students to critically assess emerging global challenges. Through an interactive, conference-style format combining lectures, case studies, debates, and group work, students develop analytical skills and the capacity to design innovative responses to complex problems. Special emphasis is placed on crisis contexts, including armed conflicts, to deepen students' understanding of environmental and health issues under conditions of severe constraint.

041SCBIL4	Cytogenetics and Molecular Biology Internship	1 Cr.
------------------	--	--------------

This course is designed to equip students with the knowledge, technical competencies, and professional attitudes required to perform practical tasks in chromosome preparation and microscopic analysis.

041ENDOL5	Endocrinology	2 Cr.
------------------	----------------------	--------------

This course introduces students to major endocrine disorders. It begins with an overview of hormonal signaling, then proceeds gland by gland, covering the hypothalamic-pituitary axis, thyroid, adrenal glands, gonads, osteoporosis, and calcium-phosphate metabolism. Each section integrates physiological background, a concise review of associated pathologies, and the biological evaluation of these conditions, highlighting test limitations and interpretation.

041ANGLL3	English	4 Cr.
------------------	----------------	--------------

This course is designed to strengthen students' mastery of English in both written and oral communication. Emphasis is placed on developing a deeper knowledge of the language, refining grammatical accuracy, and expanding vocabulary for academic and professional contexts. Students learn to effectively communicate with diverse audiences by tailoring language, style, and delivery to suit different purposes and settings. Through practical exercises, students practice producing clear and well-structured written documents that convey information efficiently, while also enhancing their oral communication skills by integrating verbal and non-verbal strategies. The course further trains students to use appropriate supporting materials and resources to ensure clarity, precision, and impact in their communication. By the end of the course, students will be able to confidently express ideas in English across a range of contexts, demonstrating both linguistic competence and communicative effectiveness.

041MMFEL6	Final Year Thesis	5 Cr.
------------------	--------------------------	--------------

This course aims to develop students' ability to document, write about, and present a chosen topic in the field of biomedical sciences and present the work before a jury.

004SECOS3	First Aid	2 Cr.
------------------	------------------	--------------

This course covers the history and organization of the Red Cross, as well as emergency care and appropriate responses to various pathological situations.

018ETHIL1	Fundamental Ethics	2 Cr.
------------------	---------------------------	--------------

In a world where reference points and values are increasingly fragmented, and in an era where norms have become increasingly relative and are shaped by each individual's personal convictions, fundamental questions continue to resonate within the conscience of all people: What should be done for an action to be truly humanizing, both for oneself and for others? How can one lead a life that is not only fulfilling and meaningful, but also responsible?

041PHARL6	Fundamentals of Pharmacology	2 Cr.
------------------	-------------------------------------	--------------

This course aims to develop students' knowledge of fundamental concepts in pharmacology that are applicable and useful in hospital and private laboratories.

004BIOGL1	General Biology	2 Cr.
------------------	------------------------	--------------

Comparative anatomy of vertebrates, reproduction, fertilization, and embryology, along with general concepts of the living world.

This course is offered to students enrolled in the first year of the Pharmacy, LNUDI, and ETLAM programs. Its objective is to introduce students to fundamental concepts in general biology, with a focus on animal biology and developmental biology.

004CHGEL1	General Chemistry + PW	3 Cr.
------------------	-------------------------------	--------------

The aim of this course is, first, to understand the structure of atoms and their architecture, and to use this understanding to determine the structure and spatial orientation of simple molecules, with the ultimate goal of understanding how molecules react with one another.

Secondly, attention is given to chemical reactions from both kinetic and thermodynamic perspectives.

Thirdly, chemical equilibria are studied through two types of equilibrium: acid–base equilibria and redox (oxidation–reduction) equilibria.

041TPCGL1	General Chemistry Practical Work	1 Cr.
------------------	---	--------------

This course offers an introduction to the fundamental principles of qualitative and quantitative chemical analysis in aqueous solution, with a particular focus on acid–base and redox equilibria, which form the basis of chemical analysis methods. Students learn to reproduce and carry out chemical procedures, rigorously following established protocols to ensure the reliability of results.

In parallel, the course provides in-depth practical training in experimental chemistry, emphasizing laboratory safety and environmental protection during experimental manipulations.

Students also deepen their knowledge of precise chemical titration techniques using modern instruments, such as the spectrophotometer. The course trains students in the use of these devices, the interpretation of the results obtained, and the evaluation of uncertainties associated with measurements.

004GENE11	Genetics	3 Cr.
------------------	-----------------	--------------

This course provides a clear introduction to the principles of clinical genetics. It familiarizes students with the fundamental concepts of human genetics and highlights their importance and applications in medical practice.

The course begins with essential concepts, including the flow of genetic information from DNA to protein, the impact of nucleotide variations on human diseases, and key scientific terminology specific to the field.

It then explores the different types of genetic disorders, covering chromosomal abnormalities (cytogenetics) and monogenic diseases, along with their main modes of inheritance—autosomal dominant, autosomal recessive, and X-linked (dominant or recessive)—as well as their characteristics, specific features, and transmission risks.

Several diseases are presented from both molecular and clinical perspectives. Finally, the course addresses cancer genetics and population genetics.

004SOLO12	Health Sociology	2 Cr.
------------------	-------------------------	--------------

This course introduces students to the fundamental concepts of sociology as applied to the field of health. It aims to develop an understanding of how social, cultural, and interactional factors influence health behaviors, as well as perceptions of the body, illness, and care.

The course addresses key topics such as socialization processes, social norms, the spread of rumors, alternative medicine practices, and the interactions between healthcare professionals and patients. It enables students to develop a comprehensive understanding of the social determinants of health and their impact on pharmaceutical practice.

041HEMAL3	Hematology	3 Cr.
------------------	-------------------	--------------

This course contributes to the acquisition of knowledge in hematology and the study of blood components, including their physiology, associated pathologies, and diagnostic methods. It explores the application of theoretical knowledge in hematology within a medical biology laboratory.

041SHEML2	Hematology Internship I	2 Cr.
------------------	--------------------------------	--------------

This laboratory training is designed to provide students with the theoretical knowledge and practical skills necessary to perform sampling procedures and manual hematology techniques, in compliance with safety, hygiene, and quality regulations.

041STHEL3	Hematology Internship II	2 Cr.
------------------	---------------------------------	--------------

This laboratory training is designed to provide students with theoretical knowledge and practical skills in blood collection and assay techniques, ensuring compliance with safety, hygiene, and quality regulations.

041SHIHL5	Hematology internship III	2 Cr.
------------------	----------------------------------	--------------

This internship in a hospital laboratory is designed to develop the knowledge and skills students need to perform hematological analyses while adhering to safety, hygiene, and quality standards.

041HISTL2	Histology	2 Cr.
------------------	------------------	--------------

This course is designed to provide students with the theoretical knowledge and practical skills necessary to contribute to technical work in anatomical pathology and cytology, under the guidance of a pathologist.

041STHIL2	Histology Internship	1 Cr.
------------------	-----------------------------	--------------

This laboratory training is designed to provide students with theoretical knowledge and practical skills in specimen preparation and staining techniques used in anatomical pathology laboratories, ensuring adherence to diagnostic standards and regulations.

041SHORL6	Hormonology Internship	2 Cr.
------------------	-------------------------------	--------------

This internship in a hospital laboratory aims to develop the knowledge and skills students need to perform hormonal analyses in compliance with good practices and established standards.

004ANPHL2	Human Anatomy and Physiology I	4 Cr.
------------------	---------------------------------------	--------------

This course is offered in the second semester of the first year. It is designed to help students acquire fundamental knowledge of the human body, which is central to their future professional practice.

The study of anatomy and physiology forms an essential foundation for any career in the health sciences by linking structure and function:

- Anatomy examines the shape and organization of the different parts of the body and their relationships.
- Physiology focuses on how these structures work, that is, on the mechanisms that sustain life.
- Clinical cases are included when relevant to illustrate the normal functioning of the body; they are intended for explanatory purposes rather than as an end in themselves.

Overall objective: See the body as a dynamic system made up of interdependent parts, rather than a collection of isolated structural units.

004ANAPL3	Human Anatomy and Physiology II	4 Cr.
------------------	--	--------------

This course is offered in the first semester of the second year. It aims to enable students to acquire fundamental knowledge of the human body, which is central to their future professional practice. The study of anatomy and physiology constitutes an essential foundation for any career in the health sciences by establishing the link between structure and function:

Anatomy studies the form and organization of the different parts of the body and their relationships. Physiology focuses on the functioning of these structures, that is, on the mechanisms that ensure the maintenance of life.

Clinical cases are incorporated where relevant to illustrate the normal functioning of the body; they are intended for explanatory purposes rather than as an end in themselves.

General objective: Consider the organism as a dynamic system composed of interdependent parts, rather than as an assembly of isolated structural units.

004HYDOS2	Hydrology	1 Cr.
------------------	------------------	--------------

This course aims to provide students with knowledge of water-related public health, with a focus on waterborne diseases and preventive measures to be implemented at both individual and community levels.

004SANEI2	Hygiene	2 Cr.
------------------	----------------	--------------

This course aims to introduce first-year pharmacy students to the fundamental principles of general and pharmaceutical hygiene.

It is designed to provide essential knowledge of contamination mechanisms, infection prevention methods, and key hygiene practices in pharmaceutical and healthcare settings. The course places particular emphasis on good personal, environmental, and professional hygiene practices, which are crucial for ensuring patient safety, maintaining the quality of pharmaceutical products, and protecting healthcare personnel.

004IPEAS2	Immunology + Pathology + Practical Work	4 Cr.
------------------	--	--------------

This course aims to provide students with a thorough understanding of how the immune system functions, its defense mechanisms, and the disorders that contribute to many diseases.

The objectives of this course are to:

- Understand the fundamental principles of innate and adaptive immunity.
- Analyze the cellular and molecular mechanisms of immune responses.
- Explain the role of the immune system in infectious, autoimmune, allergic, and cancer-related diseases.
- Introduce students to the clinical and therapeutic applications of immunology.
- Understand the main experimental techniques used in immunology.

041STIML4	Immunology Internship I	2 Cr.
------------------	--------------------------------	--------------

This laboratory training is designed to provide students with the knowledge, technical competencies, and professional attitudes necessary to apply serological techniques in compliance with safety, hygiene, and quality requirements.

041SIMML5	Immunology Internship II	2 Cr.
------------------	---------------------------------	--------------

This internship in a hospital laboratory aims to develop the knowledge and skills students need to carry out immunology laboratory analyses in compliance with good practices and standards.

041INOVL3	Innovation	2 Cr.
------------------	-------------------	--------------

The objective of the course is to introduce students to the creative mindset and specific practices that enable innovation and entrepreneurship. After establishing this mindset, students explore creativity and the sources of innovative and entrepreneurial ideas. Because believing that one can be creative is the first step toward becoming an innovative thinker and leader, the course delves into strategies for enhancing creative confidence and instilling it in others.

Students are then introduced to the design thinking process, which is a time-tested approach to innovation.



Subsequent sessions explore the various aspects of the design thinking process, from need-finding and empathy to insight generating, prototyping, and experimentation. The course then introduces the Business Model Canvas and business model innovation. Lastly, students explore how to create and implement innovative solutions and inspire others.

This course concludes with a project that allows students to put design thinking into practice through a project of their own.

004CHIO1	Inorganic Chemistry	1 Cr.
-----------------	----------------------------	--------------

This course provides fundamental knowledge of inorganic chemistry, focusing on the properties of elements and inorganic complexes. Students learn to identify key chemical properties, understand reactivity, and use systematic and common nomenclature to name inorganic compounds. The course also introduces current topics in environmental, bioinorganic, and therapeutic chemistry.

Additionally, students will study transition metal complexes, including their structure, nomenclature, formation theories, mechanisms of action, and practical applications, particularly in pharmacology, catalysis, and industry.

041VST3L6	Internship Validation III	1 Cr.
------------------	----------------------------------	--------------

This course aims to develop students' skills, enabling them to demonstrate progress in acquiring competencies related to problem-solving and decision-making in professional practice, as well as exhibiting the qualities expected in the workplace.

041SEALL6	Introduction to Food Safety	2 Cr.
------------------	------------------------------------	--------------

This course aims to familiarize students with the various food safety practices to ensure that food is safe for consumption. It addresses several important aspects, beginning with the study of physical, chemical, and microbiological risks detected in food. Students then examine good hygiene practices that must be applied when handling the food chain. These include personal hygiene, regular handwashing, wearing clean clothing, separating raw and cooked foods, cooking at appropriate temperatures, and storing food under safe conditions (refrigeration and freezing). Finally, the course provides an overview of food safety standards and regulations, as well as control systems such as the HACCP method, which allows risks to be identified and managed, and ISO 22000.

496IESPM1	Introduction to Public Health	3 Cr.
------------------	--------------------------------------	--------------

This course provides students with a broad overview of the concepts of public and global health, including fundamental definitions and key terminology, the history of public and global health, governance, mandates, functions, and health services. The course also examines the social, economic, and political determinants of health. In addition, it explores the key distinctions between public and global health and the clinical health sciences (such as medicine, dentistry, and nursing), and introduces the Sustainable Development Goals, examining their objectives and significance.

041SQLTL6	Laboratory Quality Assurance	1 Cr.
------------------	-------------------------------------	--------------

This course presents and details the Laboratory Quality System, which is based on a quality team composed of a biologist serving as Quality Manager, supported by quality technicians acting as 'quality referents,' with the aim of ensuring the continuous implementation of the quality management system.

041LWRNL6	Leadership and Work Ready Now	2 Cr.
------------------	--------------------------------------	--------------

This course is designed to prepare students for the professional world by helping them acquire both soft and technical skills that will enable them to confidently assume future responsibilities.

The course also supports students in developing self-confidence, openness, adaptability to change, and readiness for professional integration. It guides them in writing a cover letter and résumé, refining their personal branding through social media, and identifying their values, qualities, and competencies to showcase effectively to potential employers. Students will be introduced to digital tools such as Canva, and will strengthen their oral communication skills, including verbal and non-verbal communication, to master presentation and public speaking skills.



Components

Personal development: Identify values and interests; assess attributes and competencies; recognize learning styles and study strategies; set goals, plan, and monitor progress; explore the world of work through workplace immersion (introduction to work-based learning).

Communication skills: Express oneself and listen; follow and give instructions and feedback; read for information; apply presentation techniques; practice email etiquette; cooperate and work in teams; provide quality customer service; observe workplace communication; develop intercultural communication skills.

Job search techniques: Identify and apply for jobs (résumé, cover letters, career portfolios); attend interviews; conduct informational interviews; present oneself professionally.

Workplace behaviors: Demonstrate appropriate attitudes and behaviors in professional settings; participate in job shadowing; maintain work-life balance; manage time effectively; demonstrate initiative at work; complete a one-day observation internship.

041TDSIL5	Learning Through Clinical Cases	2 Cr.
This interactive course engages students in case-based analysis during each session, enabling them to examine common scenarios in medical practice, particularly within medical laboratories. It emphasizes biological reasoning, comprehensive interpretation of laboratory results, appropriate decision-making in response to specific findings, and the critical pre-analytical factors that underpin the quality of results.		
004MATTL1	Mathematics	2 Cr.
This course provides an in-depth introduction to the fundamental mathematical tools used in the study of biological systems. Its aim is to equip students with the skills needed to model, analyze, and interpret biological phenomena using key mathematical concepts. Designed specifically for students in nutrition, ETLAM, or related fields, the course emphasizes an applied approach to mathematics, directly connected to biological phenomena such as population growth, disease spread, nutrient dynamics, genetic inheritance, etc.		
004BITHS1	Medical Biotechnology	2 Cr.
This course provides advanced knowledge of genetic engineering and biotechnology, including their pharmaceutical applications and therapeutic innovations. Key topics include gene therapy, recombinant proteins, and molecular cloning; methods for drug synthesis using genetic engineering; biosimilars and their regulatory frameworks; gene-drug interactions; regulation of gene expression; and emerging therapeutic strategies based on innovative pharmaceutical biotechnologies, such as RNA interference (RNAi).		
041SITLL1	Medical Laboratory Internship I	1 Cr.
This laboratory training is designed to provide students with the essential foundations of medical laboratory practice while fostering greater independence in their learning process.		
041SALML5	Medical Laboratory Internship II	4 Cr.
This internship is designed to develop students' theoretical knowledge and practical competencies necessary for conducting laboratory analyses in hematology, immunology, bacteriology, and biochemistry, while adhering rigorously to standardized professional practices.		
041GRCML6	Medical Waste Management	1 Cr.
This course aims to provide a comprehensive and precise understanding of proper medical waste management and chemical risk control to reduce accidents, protect the environment, and ensure safer laboratory practices in compliance with applicable standards. This course is essential for students in the medical field, as they are trained in practices designed to protect the health of staff and patients, prevent environmental contamination, and uphold safety and biosafety standards.		



Students learn to define the different categories of medical waste, as well as the methods for sorting, packaging, and disposing of medical waste according to international standards.

The course also introduces fundamental concepts related to chemical risks, including toxicity, reactivity, and preventive measures (Personal Protective Equipment – PPE, Safety Data Sheets – SDS, product labeling, etc.), along with appropriate responses in the event of an accident.

004BIOMS2	Metabolic Biochemistry	4 Cr.
------------------	-------------------------------	--------------

This course consists of two main parts. The first part covers enzymology, examining the mechanisms of enzyme function in biological systems and identifying appropriate kinetic models, enzyme inhibition and activation, and their applications in pharmacy and metabolic biochemistry. The second part explores catabolic and anabolic reactions of major metabolic pathways involving carbohydrates, lipids, amino acids, nucleic acids. It details the energy balance of the various metabolic pathways essential for human life, as well as regulatory and homeostatic mechanisms and their pathophysiological implications. This course also enables students to recognize the main inborn errors of metabolism, as well as major metabolic diseases and their causes.

004LEMI3	Microbial World	3 Cr.
-----------------	------------------------	--------------

This course provides an integrated approach to the microbial world, ranging from the fundamentals of general microbiology to applications in medical and pharmaceutical microbiology. It successively covers bacterial anatomy and physiology, microbial growth and adaptation, bacterial genetics, bacteriophages, plasmids, transposons and integrons, bacterial toxins, host–pathogen interactions, human microbiota, human infections, the development of infectious diseases, the pre-analytical phase of microbiological testing, strain characterization, and the principles of rational antibiotic therapy.

The course aims to enable students to understand microorganisms of medical importance, appreciate their role in health and disease, work through the main steps of microbiological diagnosis, and interpret, at an introductory yet rigorous level, the data required for informed decision-making. The course is enriched by interactive activities, clinical case studies, group work, a project involving the critical analysis of scientific articles, and an integrative activity focused on applied microbiological diagnosis to promote the integration of fundamental knowledge, scientific reasoning, and professional relevance.

004MOLBI3	Molecular Biology + Practical Work	4 Cr.
------------------	---	--------------

This course introduces students to the fundamentals of molecular biology, covering the transmission of genetic information, DNA, replication, transcription, translation, genetic variations and mutation mechanisms, and their implications for disease. It also covers the tools used for gene analysis, as well as the various methods for studying these variations and performing genetic diagnosis, from classical methods to next-generation sequencing.

005TECSLI	Nursing Care Tools	2 Cr.
------------------	---------------------------	--------------

This course aims to develop students' skills in performing nursing care techniques, including measuring vital signs, administering infusion, changing dressings, applying bandages, collecting biological samples, and administering medications via subcutaneous, intramuscular, intravenous and intradermal routes, while adhering to patient safety and quality-of-care standards.

041CORGL2	Organic Chemistry	3 Cr.
------------------	--------------------------	--------------

The main objective of this course is to provide students with the fundamental principles of organic chemistry. The course is structured into two complementary parts:

The first part focuses on the fundamentals of structural organic chemistry, enabling students to become familiar with chemical terminology, the main functional groups in organic chemistry, and the three-dimensional structure of organic molecules.

In the second part, the basics of chemical reactivity are introduced, preparing students to understand electronic effects, reaction intermediates, reaction mechanisms, and the reactivity of different chemical functions. These concepts are linked to applications in the modern chemical industry and biological processes in living organisms. The course draws on concrete examples, particularly in the field of biochemistry, to illustrate the principles covered and to highlight the interdisciplinary connections between organic chemistry and other scientific disciplines.



041STPML3	Parasitology Internship	2 Cr.
This laboratory internship is designed to provide students with theoretical knowledge and practical skills in the laboratory diagnosis of fungal and parasitic infections in compliance with safety, hygiene, and quality regulations.		
004PAMYS1	Parasitology - Mycology + Practical Work	4 Cr.
This course enables students to deepen their knowledge of the diagnostic approach to parasitology, mycology, and medical entomology.		
041SAPHL6	Pathological Anatomy Internship	2 Cr.
This internship in a hospital laboratory aims to develop the knowledge and skills students need to perform cytological and histological procedures in a pathology laboratory in compliance with standardized practices, under the supervision of an anatomical pathologist.		
041PHYSL1	Physics	2 Cr.
This course introduces students to key areas of physics, including mechanics, electricity, fluid dynamics, vibrations, optics, atomic physics, spectroscopy, and radiation (lasers, X-rays, UV, IR, and NMR). It further explores their various applications in the medical domain.		
004PHYTS4	Phytotherapy and Aromatherapy	2 Cr.
This course aims to define phytotherapy and position it in relation to other disciplines in medicine and pharmacy. It also aims to provide students with knowledge of medicinal plants, including their origins, active parts, therapeutic properties, methods of use, side effects, drug interactions, and recommendations for use, with a view to applying this knowledge to the pharmaceutical care of patients experiencing disorders affecting different body systems.		
017CPOS11	Positive Communication	2 Cr.
This course introduces the fundamental concepts of positive communication, or nonviolent communication (NVC), based on the approach developed by Marshall Rosenberg. It highlights the impact of communication styles used in everyday life on individuals' relationships with themselves and with others. It also explores nonviolent communication as a heart-to-heart communication strategy. Through an interactive approach, students practice this strategy, which is based on empathy and self-empathy, with a focus on its four key components: observation, feeling, need, and request, both when expressing themselves and when listening to others.		
041SIP1L2	Professional Integration Internship I + Validation I	4 Cr.
This internship is designed to foster skills that enable students to progressively demonstrate autonomy in their professional practice, while remaining within the boundaries of their knowledge, competencies, and defined responsibilities.		
041SIP2L4	Professional Integration Internship II + Validation II	5 Cr.
This internship aims to develop the attitudes students need to build their professional identity, assume responsibilities, and consolidate the knowledge acquired during the academic year.		
004PSYCI4	Psychology	2 Cr.
This course familiarizes students with the field of psychology and its applications in health psychology. It is designed to help students understand the fundamental biological and psychological interactions underlying human functioning, including thoughts, behaviors, and emotions. The course also introduces key concepts in health psychology to support a better understanding of public health education and enables students to develop appropriate patient-centered approaches based on major psychological theories and models of health behavior.		

041CPAML5	Research Methodology	2 Cr.
------------------	-----------------------------	--------------

This course aims to equip graduating students with the competencies required to locate, read, and critically analyze scientific publications. It serves as a cornerstone for building a solid bibliographic foundation, especially for the preparation of the final thesis. The course trains students to interpret and evaluate biomedical literature with rigor and critical insight.

041EXCOL1	Speaking/Writing for Effective Communication	2 Cr.
------------------	---	--------------

This course fosters the development of oral and written proficiency in French. It trains students to gather, evaluate, and organize information to improve their communication skills in diverse contexts.

041MISPL4	Special Microbiology	3 Cr.
------------------	-----------------------------	--------------

This course is designed to provide students with practical knowledge and competencies in microbiology, preparing them to manage specimen collection and processing in a bacteriology laboratory.

041STATL1	Statistics	2 Cr.
------------------	-------------------	--------------

This course is designed to provide students with essential statistical methods for conducting scientific research in the field of biomedical analysis. It covers clinical data collection and analysis, the interpretation of published clinical studies, and an introduction to thesis or study report writing.

004BIOMI2	Structural Biochemistry	3 Cr.
------------------	--------------------------------	--------------

This course is part of the second-year Pharmacy program and the first-year ETLAM program. It prepares students for subsequent courses in metabolic and clinical biochemistry.

It provides the essential foundations for an in-depth understanding of the structure, molecular composition, and properties of biomolecules: carbohydrates, lipids, proteins, and nucleic acids, as well as their basic building blocks. The course is organized into five chapters. Following a general introduction to biochemistry, which highlights its importance and central role in life sciences, as well as the influence of chemical groups and three-dimensional structure on the function of biological molecules, the course successively covers carbohydrates, lipids, proteins, and nucleic acids.

For each class of molecules, the following aspects are addressed: structure, classification, physical and chemical properties, representations, derived molecules, polymers, biological roles, and importance at the level of the organism.

041DITHL3	Therapeutic Dietetics	2 Cr.
------------------	------------------------------	--------------

This course enriches students' knowledge of nutrition and helps them understand the link between dietary management and certain chronic diseases. In each chapter, students acquire basic concepts and develop an understanding of the beneficial and adverse effects of certain food components or specific diets on the body during different stages of life and in relation to certain diseases.

064VALEL1	USJ Values in Daily Life	2 Cr.
------------------	---------------------------------	--------------

This course aims to raise students' awareness of the fundamental values of Saint Joseph University of Beirut (USJ) and to encourage them to integrate these values into their personal, interpersonal, and professional lives. It engages students in critical reflection on how the values enshrined in the USJ Charter can shape their attitudes, actions, and decision-making, enabling them to address the challenges of the contemporary world.

004VIROS4	Virology	2 Cr.
------------------	-----------------	--------------

This course aims to enable students to:

- Identify the major human pathogenic viruses.
- Describe their structure and their interactions with host cells.
- Recognize the diseases caused by viral infections.
- Explain the mechanisms underlying viral latency and virus-induced carcinogenesis.
- Identify the diagnostic methods used for viral infections.
- Describe the strategies for prevention and control of viral diseases, including prophylaxis, treatment, and vaccination.



015ABC2L3

Volunteering and Civic Action

2 Cr.

This course is part of the General Education program at Saint Joseph University of Beirut (USJ). It aims to raise students' awareness of the importance of civic engagement by providing them with opportunities to participate in a variety of volunteer activities.

The course consists of two components: a theoretical component and a supervised practical component.

