

School	School of Arts & Science
Major	Biomedical Science

Major Requirements			
Code	Title	Credits	Description
BMED475	Clinical Hematology and Hemostasis	2	Clinical Hematology and Hemostasis
BMED485	Clinical Assessment and Techniques	3	The course includes theoretical and direct applications of main medical laboratory tests: Hematology, Serology, Urine, and stool analysis. Prerequisites: BMED 445
BMED460	Histopathology	3	This course deals specifically with tissue abnormalities, study of smears and aspirates in cytopathology, autopsy practice where the cause of death is identified by gross and histological examination of the dead.
BMED450L	Clinical Chemistry Lab	1	The course includes direct applications of some clinical tests such as glucose, lipids, enzymes, hormones, etc... from blood and urine. Co-requisites: BMED 450
BMED450	Clinical Chemistry	3	The course introduces students to the principles and procedures of various tests performed in Clinical Chemistry. It presents the biochemical and physiological basis for tests, the principle and procedure for the test, and the clinical significance of the test results, including quality control and normal values. It also includes basic chemical laboratory technique, chemical laboratory safety, electrolytes and acid-base balance, proteins, carbohydrates, lipids, enzymes, metabolites, endocrine function and toxicology. Prerequisites: Senior standing
BMED445L	Clinical Case Conference	1	Case studies are given in this course through which students learn how to link between physical and physiological features and patho-physiological features in diseases. Co-requisites: BIOL 445
BMED445	Pathophysiology	3	This course studies the mechanisms, etiologies, risk factors and complications of diseases processes. It emphasizes on the clinical signs and symptoms, history, prognosis and epidemiology of diseases. Study of pathological imbalances including cellular adaptation and injury, fluid compartment exchanges with edema and dehydration, electrolyte functions, control and imbalances, acidosis and alkalosis, nervous system injuries and responses, sensory imbalances, skeletal system injury and repair, soft tissue injury and repair, and muscle injury and dysfunction. Prerequisites: BIOL 345 & BIOL 385

BMED360	Hematology	3	The course will focus on studying the structure and function of formed elements of blood, bone marrow and plasma, production, release and survival; morphological characteristics of normal and abnormal cells; quantitative and qualitative abnormalities. Prerequisites: BIOL 345
MEDL399	Medical Laboratory Internship I	3	Medical Laboratory Internship I
BMED370L	Parasitology Lab	1	This course will allow students to acquire and master technical ways for diagnosis of parasitic illnesses of different sources: microscopic examination, staining and immuno-histological techniques.
BMED360L	Hematology LAB	1	Lab applications focusing on the measurement and analysis of CBC's parameters, kinds of anemia, blood films, quantitative and qualitative abnormalities in white blood cells line (acute and chronic leukemia's).
BMED370	Parasitology	2	A basic course primarily designed for biology majors who desire an understanding of human and animal parasitology, including classification, morphology, development, host-parasite relationships and physiology.
BMED390	Medical Lab Management and Professional Ethics	1	Medical Lab Management and Professional Ethics.
BMED425	Serology and Blood Banking	3	The course focus on studying the principles of serology, main serological tests, activities of blood banking, cross match, blood transfusion and separation of blood element, packed platelets, packed blood cells, congealed plasma. Prerequisite: BMED 360
BMED425L	Serology and Blood Banking Lab	1	This lab covers the different types of serological reactions: direct and indirect agglutination, precipitation, coombs testing, pre-transfusion testing and cross matching as well as different techniques of preservation of different blood components.
BMED430	Medical Microbiology	3	This course will focus on studying viruses and fungi, their classification, transmission, physiology, main associated syndrome, and technical analysis. Prerequisite: BIOL 385
BMED430L	Medical Microbiology Lab	1	This lab covers different techniques used in diagnosis of viral and fungal illness such as cultures, immune-serological and molecular techniques. Co-requisite: BMED 430.
BMED470	Clinical Mycology and Virology	2	Clinical Mycology and Virology
MEDL499	Medical Laboratory Internship II	3	Medical Laboratory Internship II

BMED420	Basic Life Support	1	An introductory course to manage emergency cases, it includes practice on CPR, causality transport and main supportive measurements.
BMED380	Introduction to Quality Control and Accreditation	2	This course convey to students a basic understanding of quality management and accreditation process of the Lebanese health care organizations, to understand how to collect, organize and interpret data and to apply them for continuous improvement in terms of practice and quality management.

Core Requirements			
Code	Title	Credits	Description
BIOL425	Immunology	3	This course is designed to teach the basic tenants of Immunology. It also undertakes all the important areas of contemporary immunological knowledge and simultaneously provides a historical view of the discoveries that have built the groundwork of modern immunological thought and mechanism of fighting disease. The two functional divisions of the immune system, the innate and the adaptive immune system, antigens, antibodies and lymphocytes are studied, along with the cells and the soluble factors responsible for the immune response. The course will also describe principles of immunology applicable to concepts in clinical medicine; introduction to diagnosis and management of human immuno-pathologic disorders. Prerequisites: BIOL 345
CHEM255L	Basic Organic Chemistry Lab	1	The laboratory work involves hands-on-experience in organic chemistry. Experiments include basic organic synthesis, alcohol dehydration, hydrocarbon crystallization and purification as well as characterization of organic functional groups.
CHEM255	Basic Organic Chemistry	3	This course is designed for non-majors. It provide an introduction to the structure, isomerism and chemistry of alkanes, alkenes and some representative functional groups such as alcohols, ethers, aldehydes, ketones, carboxylic acids, amines and amides. Prerequisite: CHEM 200.
MATH245	Statistics for Health Sciences	3	General introduction to statistical methods used in the health, biological, biomedical sciences, pharmacy and medical sciences. Topics include research methods and design, descriptive statistics, performance characteristics of diagnostic tests, graphical methods, probability, estimation, hypothesis testing, p-values, regression and correlation, and clinical trials. Prerequisite: ENGL 150
CHEM200L	General Chemistry Lab	1	The laboratory work involves hands-on experience with chemical systems. Experiments include basic calorimetry, a limited qualitative and quantitative analysis scheme, properties of gases, acid-base and redox titrations. Co-requisites: CHEM 200
CHEM200	General Chemistry	3	Basic principles of chemistry, electronic structure of the atom, chemical periodicity, molecular structure and bonding, acids and bases and the states of matter, rates of chemical reactions, and chemical equilibrium are covered in this course. Prerequisites: ENGL 150; CHEM, or S grade on the Chemistry Placement Test Prerequisites: CHEM160, ENGL101. Co-requisites: CHEM200L.

BMED205	Biophysics	3	Introduction to the physical sciences, principles and properties, as applied to biology and medicine. The course has a special emphasis on elasticity of the biological system, biomechanics, bioelectricity, physics of heat, lights, blood circulation, hearing and vision, and topics in biomedical imaging and analysis: echography, magnetic resonance, and nuclear radiation. Prerequisite(s): ENGL 150
BIOL385	Microbiology	3	Characteristics of microorganisms and parasites - emphasizing mechanisms by which they cause disease in humans. Prerequisites: BIOL 200
BIOL385L	Microbiology Lab	1	Sterile techniques, media preparation, streaking, identification, isolation and purification of different bacterial strains are performed. Co-requisites: BIOL 385
BIOL365	Genetics	3	Basic concepts of prokaryotic genomics, Mendelian inheritance, pylogenic inheritance, linkage and mapping, population genetics, evolution, DNA replication, gene expression, mutation, gene regulation, extranuclear inheritance, bacterial and viral genetics, and recombinant DNA technology are covered. Prerequisites: BIOL 275
BIOL360L	Human Physiology & Anatomy Lab	1	Human Physiology & Anatomy Lab
BIOL360	Human Physiology & Anatomy	4	Studies the structure and function of the following body systems: blood, lymphatic, cardiovascular, respiratory, digestive, urinary, and reproductive. Prerequisites: BIOL200
BIOL275L	Cell and Molecular Biology Lab	1	Experiments to include cellular fractionation, DNA and RNA isolation, electrophoresis, DNA digestion, plasmid isolation, bacterial transformation, and polymerase chain reaction applications. Co-requisites: BIOL 275
BIOL275	Cell and Molecular Biology	3	The course discusses the basic concepts of cell and molecular biology: macromolecular assembly, biomembrane structure and function, storage and expression of genetic information, biogenesis, traffic, reception and transduction, cytoskeleton and extracellular matrix, and the cell cycle. Basic laboratory methods in Cell & Molecular Biology are also introduced. Prerequisites: BIOL 200
BIOL200L	General Biology I Lab	1	This lab course introduces principles of microscopy with emphasis on viewing different animal tissues and cells. A detailed study of the animal kingdom including evolution, classification, and anatomical morphology. Co-requisites: BIOL 200

BIOL200	General Biology I	3	An introductory level course to energy transfer through living organisms, cell biology, membrane transportations, genetics, human physiology, evolution, and morphology and physiology of organ systems, understanding diversity with emphasis on the animal kingdom and evolution. Protozoans are also studied. Prerequisites: ENGL 150; BIOL 150, or S grade on the Biology Placement Test
BIOC310	Medical Biochemistry	4	Medical Biochemistry is designed to present the basics of biochemistry, thus including a study of structure of amino acids, carbohydrates, lipids, proteins, enzymes, and nucleotides, in addition to their metabolism, bioenergetics, membranes and signaling systems, integration and regulation of the major metabolic pathways, nitrogen metabolism, myoglobin, hemoglobin, and hemostasis, with emphasis on the biochemical basis of human disease. Prerequisite: BIOL 200 & CHEM 250

General Education Requirements			
Code	Title	Credits	Description
ENGL251	Communication Skills	3	The objectives of this course are to improve students' writing skills for academic purposes by developing effective use of grammatical structures; analytical and critical reading skills; a sensitivity to rhetorical situation, style, and level of diction in academic reading and writing; and competence in using various methods of organization used in formal writing.
ENGL201	Composition and Research Skills	3	This course focuses on the development of writing skills appropriate to specific academic and professional purposes; the analysis and practice of various methods of organization and rhetorical patterns used in formal expository and persuasive writing; the refinement of critical reading strategies and library research techniques; and the completion of an academically acceptable library research paper. Prerequisites: ENGL150, ENGL151.
CULT200	Introduction to Arab - Islamic Civilization	3	The purpose of this course is to acquaint students with the history and achievements of the Islamic civilization. Themes will include patterns of the political and spiritual leadership; cultural, artistic, and intellectual accomplishments Prerequisites: ENGL051, ENGL101, ENGL151.
CSCI200	Introduction to Computers	3	The course aims at making students competent in computer-related skills. It is supposed to develop basic computer knowledge by providing an overview of the computer hardware and basic components as well as hands-on practice on common software applications such as Word, Excel, Power Point, Internet and Email. The student will learn how to use the new features of Microsoft Office 2010 mainly Word documents, Excel spreadsheets and PowerPoint presentations. On the surface, MS Office 2010 looks a lot different than previous versions (no more menus or toolbars!), but by learning to understand the dramatically changed, Ribbon-based interface, you'll quickly get back on the road to productivity.
ARAB200	Arabic Language and Literature	3	This course is a comprehensive review of Arabic Grammar, Syntax, major literature and poetry styles, formal and business letters.