School	
Major	Bachelor of Science in Biomedical Science

Major Requirements			
Code	**Title**	**Credits**	**Description**
BMED485	Clinical Assessment and Techniques	3	This course is designed to prepare students to handle correctly specimen collection and handling in medical laboratory setting and to perform basic blood, urinary, stool and body fluid testing. Interpretation of test results and phases of laboratory work are cornerstones in this course. Infection control measures and quality check are highlighted and implemented during all practical sessions.
BMED460	Histopathology	3	This course provides advanced knowledge in the fields of cell and tissue pathology. The course will introduce students to the theory and practice of histological techniques; including surgical cutup, fixation, processing, embedding, sectioning and staining of tissues using routine and specialized techniques. The course leads to understanding of the normal histological structure of cells and tissues within the human body as well as the generalized and specific pathological outcomes associated with each tissue
BMED450L	Clinical Chemistry Lab	1	Performance of laboratory procedures necessary to function in a clinical chemistry laboratory. Lab sessions will allow students to properly perform all tests with proper understanding of the principle and procedure, and clinical significance of the test results.
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, therapeutic drug monitoring or substance abuse.
BMED445L	Clinical Case Conference	1	The clinical case conference is designed to offer a summative overview of basic techniques and tools used in management of our different diseases. It focuses on the utility of different para-clinical investigations in assessment of different human systems-diseases (screening, diagnosis and prognosis).
BMED445	Pathophysiology	3	Pathology is an integrative biomedical science that forms the theoretical base of modern medicine. Together with the fundamental mechanisms of disease origin and development, pathophysiology deals with the mechanisms of disease prevention, compensation of the damaged functions and recovery. Knowledge of these mechanisms is needed for elaboration of principles and methods of therapy and prophylaxis. It is a Subject that bridges between basic theoretical disciplines and clinical medicine and lays a background to the clinical thinking of healthcare workers including physicians, pharmacists and biomedical technicians. This Pathophysiology course is divided into three major parts. The first part is devoted to general concepts of disease origin and development as well as to detailed study of general pathological processes. The second part studies the most common systemic disorders. The third part of the course covers common disease processes of different organs and systems. These major parts include the following principal points

BMED360	Hematology	3	BMED360 course is intended to introduce students to fundamental concepts in hematology, including normal physiology of blood, development of blood cell elements, metabolism of hemoglobin and iron, recognition of normal and abnormal cell morphology, studies of all types of anemia, studies of benign disorders of leukocytes, studies of benign platelets disorders, and tests employed in the hematology laboratory. Also, this course introduce students to basics of hematology automated analyzer and interpretation of the results released, and to the basics of quality assessment in hematology department
BMED360L	Hematology LAB	1	Performance of laboratory procedures necessary to function in a clinical hematology laboratory. Student laboratory sessions will allow the student to collect blood, make a peripheral blood smear, and examine the smear, as well as perform several of the routine tests done in the clinical laboratory on peripheral blood. Furthermore, students will be taught the basics and principles of automated hematology analyzer.
BMED370	Parasitology	2	This course aims to provide a comprehensive theoretical knowledge of Bacteriology including the spread of micro-organisms, disease causation, diagnosis, treatment/prevention of pathogens of major significance to public health. The biological characteristics and pathologic mechanisms (virulence factors) of different parasites are covered. Clinical implications and clinical cases are discussed as well as the most important laboratory testing for diagnosis and treatment. It also touches points on the role of parasites in health and disease, antiparasitic drugs and vaccines. Assignments covering up-to-date topics preparation are demanded.
BMED390	Medical Lab Management and Professional Ethics	1	This course aims to guide and orient students about different aspects of the laboratory work in the different lab sections, management of processes and facility, infection control, sampling management, lab safety, incidence of different lab accidents and their management. It introduces students to basic management tools regarding equipments, supplies, personnel, information and quality issues. Also a part of the course is reserved for study of biomedical ethics and the function of laboratory technician in the medico-clinical sphere. In addition, the course describes the skills and abilities required for achieving professionalism in a laboratory setting.
BMED425	Serology and Blood Banking	3	This course introduces students to major blood group systems and their role in transfusion medicine with emphasis on ABO and Rh systems and the investigation of ABO discrepancies; donor eligibility criteria and screening; collection, processing, handling and storage of blood components and testing; DAT and IAT; essentials of pretransfusion testing; blood component preparation and transfusion therapy; massive transfusion; transfusion adverse reactions; and hemolytic disease of newborn. The course also includes introduction to basic and more complex serologic methods (Agglutination, precipitation, immunofixation, labeling techniques in immunoassay), soluble mediators of immune response and their assessment, serologic manifestations of infectious diseases, autoimmune diseases, and tumor markers).
BMED425L	Serology and Blood Banking Lab	1	Performance of laboratory procedures necessary to function in a serology laboratory and blood bank. Student laboratory sessions will allow the student to properly use pipettes, determine ABO and Rhesus blood group, perform of crossmatching test, perform Coombs tests, ELISA test as well as perform several of the routine serological tests done in the laboratory. Furthermore, students will be taught the basics and principles of serology.

BMED430	Medical Microbiology	3	This course introduces students to the basic principles of medical microbiology and infectious diseases. It covers mechanisms of infectious diseases transmission, diagnosis, and treatment/prevention of pathogens of major significance to the public health. The biological characteristics and pathologic mechanisms of different microbes are covered. Relevant clinical examples are provided. It also provides opportunities to develop informatics and diagnostic skills, including the use and interpretation of laboratory tests in the diagnosis of infectious diseases.
BMED430L	Medical Microbiology Lab	1	This lab focuses on medical aspects of bacterial pathogens, culture, biochemical, serological and other unique characteristics that might aid in the process of identification of these pathogens. It covers different techniques of isolation and identification of clinically significant microorganisms. It emphasize on cultures and immune serological and molecular techniques. The course addresses the basic medical bacterial groups in details Gram negative and positive bacilli and Gram nehave and positive cocci.In addition unclassified pathogens are discussed.
BMED470	Clinical Mycology and Virology	2	This is a clinical laboratory science advanced course designed for the senior clinical laboratory student who has completed the introductory microbiology course. The course covers pathogenesis of viral and fungal diseases in humans and describes isolation and identification techniques for these organisms. Emphasis will be placed upon visual, serological, and molecular methods of lab diagnosis, as well as applicable laboratory techniques to recover and identify viral and fungal organisms from clinical specimens.
BMED475	Clinical Hematology and Hemostasis	2	This course involves a study of hematopoietic malignancies such as leukemias, lymphomas and plasma cell neoplasms describing the clinical features, blood and bone marrow findings, genetics features, molecular biology testing features, etc...., physiology of hemostasis and its disorders, physiology of fibrinolysis and its disorders, theory and techniques of coagulation studies and the clinical correlation of all techniques. Furthermore, this course introduces students to some advanced topics in hematology (Flow Cytometry technique, immunophenotyping of leukemias and lymphomas, cytochemistry, Platelet light transmission aggregometry ...)
MEDL399	Medical Laboratory Internship I	3	This training-course provides the student with first-hand experience as a technologist in the medical laboratory. Utilization of skills learned in previous coursework and application of those skills in the areas of phlebotomy, hematology, clinical chemistry and parasitology. It consists of 3 months of supervised, unpaid rotation time at the intern site (private medical laboratory) for development of laboratory skills & professional behavior, organizing work and solving problems in these various fields. In the clinical internship courses the student continues to learn, correlate and apply the knowledge and skills acquired during the academic core courses. Under the direction of Licensed Medical Technologists , the student performs diagnostic procedures developing laboratory organization and proficiency under actual working conditions.
MEDL499	Medical Laboratory Internship II	3	The course is designed to allow students to develop the skills, knowledge, and attitude required to function in a professional manner in the health care setting. Laboratory information services, client services and quality assurance will be covered. The student will demonstrate skill development in the performance of a variety of special procedures and techniques. Blood bank, Immunology, Serology and Microbiology departments are covered in this course.

BMED380	Introduction to Quality Control and Accreditation	2	This course introduces the concept of accreditation as certification of competency, authority, or credibility and its necessity to ensure safety, efficacy and good standards in health care systems. It focuses on laboratories' accreditation as continuous process and emphasizes quality control strategies and improvement plans.
BMED370L	Parasitology Lab	1	Performance of laboratory procedures necessary to function in a parasitology laboratory. The course describes isolation and identification techniques of different parasites. Emphasis will be placed upon visual methods of lab diagnosis, as well as applicable laboratory techniques to recover and identify parasitic infection from clinical specimens. During laboratories, power point presentations should be set up to supplement the slide collection.
BMED420	Basic Life Support	1	This course equips the students to deal with medical emergencies such as heart attacks or choking can happen at any time. They will acquire knowledge, practical skills & understanding required to provide appropriate first-aid treatment for injuries and sudden illness until medical professionals arrive to take over.

Core Requirements			
Code	**Title**	**Credits**	**Description**
BIOL425	Immunology	3	The course describes the components of the immune system and explains mechanisms of immune responses. The course also discusses the immune-pathologies that arise following dysfunction of the immune system.
CHEM255L	Basic Organic Chemistry Lab	1	CHEM255L is a laboratory course to teach the students several common organic chemistry techniques. Emphasis is placed on experimental precision and accurate results as well as safe laboratory procedures. This laboratory course is for students with good aptitude for synthesis in organic chemistry and who want to learn the preparation, isolation, and identification of organic compounds. Students will have also the opportunity to explore interesting areas of organic chemistry and work more independently on the laboratory.
CHEM255	Basic Organic Chemistry	3	This course is an introduction to the basics concepts of organic chemistry. We will cover electronic structure and bonding with an emphasis on the relation between structure and physicochemical properties. It also covers nomenclature, stereochemistry, reactivity of aliphatic hydrocarbons, aromatic compounds, alcohols, aldehydes, ketones, carboxylic acids and derivatives in addition to the practical aspects of organic chemistry in numerous health and daily life related situations.

MATH245	Statistics for Health Sciences	3	“Introduction to Epidemiology & Biostatistics” is an integrated course that introduces students to the basic principles of Epidemiology and Biostatistics. The course covers the basic principles of research design and the statistical methods and tools used in quantitative data analysis in the domain of health sciences. The first part of the course focuses on epidemiology and covers the design of epidemiological studies, epidemiological measures of the frequency of vital events (health, disease, disability and death), measures of association and impact of the risk factors on health events in human populations and the types of bias in epidemiological studies. It also covers the issues of sampling and the methods of summarizing and presenting health-related data. The second part of the course focuses on biostatistics and covers the methods of data collection and analysis, probability distribution of different outcomes. It also covers the concept of estimation (confidence intervals), hypothesis testing & statistical significance, correlation, performance characteristics of diagnostic tests, and practice in critical reading of medical literature. The course also includes a practical part in the laboratory on the basics of the performing statistical analysis of data using the SPSS statistical program.
CHEM200L	General Chemistry Lab	1	This course lab covers the principles of general chemistry with emphasizing on laboratory applications to all concepts covered in the general chemistry course as well as preparing students to the lab work. Moreover, in this course lab, you will be introduced to the world of chemistry in terms of preparing solutions, experimenting and analyzing collected data. You will also have the chance to become familiar with lab material and equipment, learn enough about chemical substances, storing and mixing material as well as their applications in the chemical and pharmaceutical fields.
CHEM200	General Chemistry	3	This course is a first semester course, intended for students who desire to acquire the basic principles in chemistry. The emphasis of the course will be on the fundamental principles of general chemistry, which include terminology, qualitative concepts and quantitative skills. The general topics included in this course are: Quantum Theory of the Atom; Electrons and Periodicity; Bonding; Molecular Geometry; Hybridization; Acid/base Chemistry; Kinetics and reactions mechanism and Solubility and Complex ion equilibria.
BMED205	Biophysics	3	This course is a 3-credit course covering 8 topics. It is devoted to the applications of Physics to Biology and medicine.
BIOL365	Genetics	3	This course introduces to students recent advances in the molecular genetics field such as the study of the molecular structure and function of genes and the regulation of gene expression of prokaryotic and eukaryotic genes in a genome. This course examines as well the genomes of eukaryotes including how genomes are mapped and sequenced, the function of the genome and ethical issues arising from genomic information. Covered aspects include gene therapy, genetic disorders, the study of mutations and their resulting phenotypes, genetics of cancer, genetic screening, genetic engineering and the human genome.

BIOL360L	Human Physiology & Anatomy Lab	1	This lab deals with the structure of the human body. It includes the study of tissues, skeletal, muscular, nervous, and cardiovascular systems. It is presented using microscopic slides, human skeletal models, anatomical models, drawings, and dissections.
BIOL360	Human Physiology & Anatomy	4	This course is designed to teach students human physiology and anatomy. Physiology is the study of the process or function of living things. The major goals of physiology are to understand the response of the body to stimuli and understand how the body maintains conditions within homeostasis in various environmental conditions. The study of physiology consists of many different levels including cell physiology, organ physiology and systemic physiology. Students will be exposed to all of these levels starting at the cellular level and eventually moving up to the system level. Physiology and anatomy are closely related subjects. Anatomy is the scientific discipline that investigates body structures. Often to fully appreciate the physiology of a given system it is necessary to first examine its anatomy. A true understanding and appreciation of physiology can only occur if structure and function are concurrently learned.
BIOL275L	Cell and Molecular Biology Lab	1	This course introduces students to current laboratory techniques applied in cellular and molecular biology. Practical information related to the cellular structures and functions are delivered with an emphasis on the molecular perspective. This course is designed for students intending to major in science and to expand their laboratory experience with current molecular techniques.
BIOL275	Cell and Molecular Biology	3	This course focuses on major biological principles and concepts related to cellular and molecular biology with emphasizing on the structural organization and function of different cellular constituents, including the organization and trafficking along the endomembrane system, the interaction and communication between cells and with their environment, the importance of the cytoskeleton as well as current techniques in cell and molecular biology. The course also includes a brief study of cancer.
BIOL200L	General Biology I Lab	1	General Biology I lab introduces students to basic techniques and safety practices in the laboratory; reinforcing the concepts learned in General Biology I lecture. It provides hands-on experience of some of the concepts discussed in the latter course.
BIOL200	General Biology I	3	This course aims to familiarize the student with the organization and classification of living systems. The covered topics include mainly the cell structure and function, cell division, cell biochemistry, cellular respiration, DNA structure and protein function, as well as animal development and classification. This course has a separate one credit-laboratory component.
BIOC310	Medical Biochemistry	4	The study of human biochemistry describes how the body works, and provides a basis for understanding what can, and often does, go wrong. From a physician's point of view, biochemistry provides not only a description of **how the system works**, but also a foundation for understanding how to improve its operation through appropriate nutrition, exercise, preventive medicine, **how to diagnose problems** and, where possible, **how to remedy them.** Current therapies include recombinant proteins, such as human insulin or erythropoietin synthesized by bacteria, and future therapies will include genetic engineering, involving gene rather than organ transplants. To understand how the human body works, and the basis of the therapies for its maintenance and healing, it is essential to understand not only the chemistry of the reactions, but also the functional interactions between metabolic pathways, organs, and tissues. This, in a broad sense, is the realm of physiologic biochemistry.

BIOL385	Microbiology	3	This course covers principles of microbiology with emphasizing on the diversity and structural characteristics of microorganisms, impact of microbes on everyday life and the role of microbes in the host-pathogen interactions. Moreover, in this course, you will be introduced to the world of microbiology in terms of isolation, identification and classification. Also, you will have the chance to discover examples of different groups and species of microorganisms that have direct impact on human health, mechanism of causing diseases and the beneficial effects on the biotechnology sector as applications in the food industry.
BIOL385L	Microbiology Lab	1	Microbiology laboratory is a two hours a week laboratory course with experiments in microbial culture, staining techniques, disinfection, and sterilization. Isolation of bacteria from mixed cultures. Use various metabolic reactions in the identification and classification of organisms.

General Education Requirements			
Code	**Title**	**Credits**	**Description**
ENGL251	Communication Skills	3	Workplace Occupational Writing is an advanced interdisciplinary writing course emphasizing workplace and technical communication and editing appropriate to diverse professions. It incorporates practice and study of selected types of discourse employed in professional writing situations, preparing students for different systems of writing in their professional lives. Examples from the writing of workplace professionals are analyzed and used as models to demonstrate the transition from academic to professional writing.
ENGL201	Composition and Research Skills	3	This course builds upon the skills acquired in pre-requisite courses mainly ENGL 151 to further develop students' critical thinking and academic writing competencies. Students will read and respond to a variety of texts from different disciplines and produce a research paper using analytical and critical skills in response to texts.
CULT200	Introduction to Arab - Islamic Civilization	3	Øª Ù□Ù□Ø«Ù□Ù□ Ø§Ù□ØØ¶Ø§Ø±Ø© Ø§Ù□Ø¹Ø±Ø¨Ù□Ø© Ø§Ù□Ø¥Ø³Ù□Ø§Ù□Ù□Ø© Ù□Ø§ØØ¯Ø© Ù□Ù□ Ø£Ù□Ù□ Ø§Ù□Ø-Ø¶Ø§Ø±Ø§Øª Ù□Ù□ Ø§Ù□ØªØ§Ø±Ù□Ø® Ø¨Ù□Ø§ Ø£Ù□Ø¬Ø²ØªÙ□ Ù□Ù□ Ø¥Ø¨Ø¯Ø§Ø¹Ø§Øª Ø¹Ù□Ù□Ù□Ø© Ù□Ø«Ù□Ø§Ù□Ù□Ø© Ù□ØØ¶Ø§Ø±Ù□Ø© ØªØ±Ù□Øª Ø£Ø«Ø±Ù□Ø§ Ø§Ù□Ø¹Ø¸Ù□Ù□ Ù□Ù□ ØªØ§Ø±Ù□Ø® Ø§Ù□Ø¨Ø´Ø±Ù□Ø©. ØªÙ□Ø´Ù□Ù□Ù□ Ù□Ø°Ù□ Ø§Ù□Ù□Ø§Ø¯Ø© Ø§Ù□Ø¯Ø±Ø§Ø³Ù□Ø© Ù□Ù□Ø¯Ù□Ø©Ù□ Ø£Ø³Ø§Ø³Ù□Ø© Ù□Ù□ØªØ¹Ø±Ù□ Ù□Ù□ Ø¹Ø±Ø¨Ù□ Ø¹Ù□Ù□ ØªØ§Ø±Ù□Ø® Ø-Ø¶Ø§Ø±ØªÙ□Ø□ Ù□Ø§ Ù□Ù□Ù□ØªØ®Ø± Ø¨Ù□Ø§ Ù□ØØ³Ø¨Ø□ Ø¨Ù□ Ù□Ù□Ø¬Ø¹Ù□ Ù□Ù□Ù□Ø§ ØØ§Ù□Ø²Ù□Ø§ Ù□Ø³ØªÙ□Ù□Ø¶ Ø¨Ù□ Ù□Ø§Ø¨Ù□Ù□Ù□Ø§ØªÙ□ Ù□Ù□Ø¯Ø±Ø§ØªÙ□ Ø§Ù□Ø¹Ù□Ù□Ù□Ø© Ø§Ù□Ù□Ø§Ù□Ù□Ø© Ù□Ø¥Ø¹Ø§Ø¯Ø© Ø§Ù□Ø§Ø³ØªÙ□Ù□Ø§Ø¶ Ø§Ù□Ø-Ø¶Ø§Ø±Ù□. Ù□ØªØØ±Ù□ Ø§Ù□Ù□Ø§Ø¶Ù□ Ù□Ù□Ù□Ø§ Ø¯Ù□Ù□ Ø´Ø¹Ù□Ø±Ù□ Ù□Ø§Ø¹Ù□ Ù□Ù□Ù□Ø§Ø□ Ø¹Ù□Ù□ Ø£Ù□Ù□ Ù□Ø°Ø§ Ø§Ù□Ù□Ù□Ù□Ø±Ù□Ø± Ø§Ù□Ø¯Ø±Ø§Ø³Ù□ Ù□ØØ§Ù□Ù□ Ø£Ù□Ù□ Ù□Ø³ØªØ«Ù□Ø± Ø§Ù□Ù□Ø¹Ù□ Ø§Ù□ØØ¶Ø§Ø±Ù□ Ù□Ø§Ù□Ø«Ù□Ø§Ù□Ù□ Ø¹Ù□Ø¯ Ø§Ù□Ø·Ù□Ø§Ø¨ Ø§Ù□Ø¹Ø±Ø¨Ø□ Ù□Ù□Ø³ØªÙ□Ù□Ø¯ Ù□Ù□ Ù□Ø°Ø§ Ø§Ù□Ù□Ø®Ø²Ù□Ù□ Ù□Ù□ØµÙ□Ø¹ Ø£Ù□Ù□Ù□Ù□Ø§ Ø¬Ø¯Ù□Ø¯Ù□Ø§ Ù□Ù□Ù□Ø³ØªÙ□Ø¨Ù□.
CSCI200	Introduction to Computers	3	The course aims at making students competent in computer-related skills. It is supposed to develop basic computer interface knowledge by providing an overview of managing folders and files, opening a start menu, and hands-on practice on typical software applications such as Word, Excel, and PowerPoint. The student will learn how to use the new features of Microsoft Office 2017, mainly Word documents, Excel spreadsheets, and PowerPoint presentations. Moreover, the course aligns with the Cisco Networking AcademyÂ® Get Connected course, which helps students understand how to connect to the Internet.

ARAB200	Arabic Language and Literature	3	ØªØªØ£ÙÙ ÙØ§Ø¯Ø© Ø§ÙÙØºØ© Ø§ÙØ¹Ø±Ø¨ÙØ© ÙØ¢Ø¯Ø§Ø¨ÙØ§ ÙØºÙØ± Ø§ÙÙØªØ®ØµØµÙÙ ÙÙ Ø«ÙØ§Ø«Ø© Ø£ÙØ³Ø§ÙØ Ø£ØØ¯ÙØ§ ÙØªÙØ§ÙÙ Ø¯Ø±ÙØ³Ø§Ù Ø£Ø³Ø§Ø³ÙØ© ÙÙ Ø§ÙÙØÙ ÙØ§ÙØµØ±Ù ÙØ§ÙØ¨ÙØ§ØºØ©. ÙØ§ÙØ«Ø§ÙÙ ÙØªÙØ§ÙÙ ÙØ¨Ø§ØØ« ÙÙ Ø§ÙØ£Ø¯Ø¨ ÙØ§ÙØªØÙÙÙ. Ø£ÙØ§ Ø§ÙÙØ³Ù Ø§ÙØ«Ø§ÙØ« ÙÙØ¹Ø§ÙØ¬ Ø¨Ø¹Ø¶ ØªÙÙÙØ§Øª Ø§ÙØªØ¹Ø¨ÙØ± ÙØ§ÙØªÙØ§ØµÙ.