School	
Major	Bachelor of Science in Biology

Major Requirements			
Code	**Title**	**Credits**	**Description**
BIOL450	Modern Topics in Biology	3	Modern Topics in Biology
BIOL435L	Developmental Biology Lab	1	A study of animal embryos at different developmental stages by a choice of a representative animal model of every phylum to perform a comparative study. Co-requisites: BIOL 435
BIOL435	Developmental Biology	3	It describes the major morphological features of the various stages of animal development with the emphasis on mammals, prenatal and postnatal stages. The changes that cells undergo as they acquire specialized roles during development, reviews the molecular mechanisms underlying cell changes during development and how the overall animal body plan is established, show how development reveals an underlying unity among diverse forms of life, yields important insights into evolution, and understand the major experimental approaches used in the study of development. Prerequisites: BIOL 345
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
BIOL385L	Microbiology Lab	1	Sterile techniques, media preparation, streaking, identification, isolation and purification of different bacterial strains are performed. Co-requisites: BIOL 385
BIOL385	Microbiology	3	Characteristics of microorganisms and parasites - emphasizing mechanisms by which they cause disease in humans. Prerequisites: BIOL 200
BIOL375L	Plant Physiology Lab	1	Photosynthesis, determination of essential nutrients by hydroponics, sexual & asexual reproduction. Nastic movements and tropisms are also observed, stress physiology, osmosis, diffusion and plant competition. Co-requisites: BIOL 375
BIOL375	Plant Physiology	3	This course is an overview of the basic mechanisms underlying plant function, growth and development. General topic areas will include: plant structure and cell biology, plant-water relations and mineral nutrition, long-distance transport phenomena, photosynthesis, respiration and plant metabolism, plant growth regulators, plant development, plant stress physiology and plant biotechnology. Prerequisites: BIOL 250
BIOL335L	Ecology Lab	1	Introduction to spreadsheets, plant competition, demography, estimating population Size, spatial pattern in the forest, functional response, mimicry, and effective population size. A study of biotic and abiotic factors that influence populations and species, in addition to field trips to investigate different Lebanese ecosystems. Co-requisites: BIOL 335
BIOL335	Ecology	3	Basic concepts in ecology with emphasis on natural resource ecosystems. Major topics covered include the physical environment, population ecology, community ecology, ecological energetics, biological diversity & conservation biology, global climate change, and ecosystem management, in addition to species-species and species-environment relations. Prerequisites: BIOL 200
BIOL490	Seminar	1	Selected recent and contemporary advances in the various fields of the biological sciences and affiliated disciplines are introduced. Prerequisites: Senior Standing

BIOL315	Animal Behavior	3	Course description: This course exposes students to evolutionary and ecological processes that promote the vast diversity of behaviors found on our planet. It focuses on how animals process and respond to environmental stimuli. It also examines the ecology of behavior, stressing the links between environmental factors and behavioral patterns, group formation, territoriality, colonial breeding, and reproductive behavior. The last part of the course explores the evolution of social behaviors, sexual selection, mating and parental care.
BIOL485	Neurobiology	3	This course will provide a detailed exploration of the basic physiological processes that occur within the nervous systems of various organisms. An interdisciplinary overview of the central nervous system, drawn from current knowledge and research on vertebrate and invertebrate neurobiology.
BIOL315L	Animal Behavior Project	1	This course is a practical application to the knowledge that is acquired by students in the Animal Behavior course. Here, students will learn how to selec_t a project topic, design and conduct experiments, collect data, control variables as well as present their work either in poster__oral presentation sessions.

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__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.

Core Requirements			
Code	**Title**	**Credits**	**Description**
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

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.
CHEM260L	Analytical Chemistry Lab	1	This laboratory course stresses the use of methods and instrumental techniques for quantitative chemical analysis.
CHEM260	Analytical Chemistry	3	This course provides theory and methods associated with gravimetric and volumetric analysis and simple instrumentation. It includes an introduction to statistical evaluations of analytical data. It emphasizes the quantitative determination of substances using spectroscopic analysis, analytical separations, chromatography, and electrochemical methods: potentiometry, voltammetry, and coulometry. Prerequisite: CHEM 200
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.
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
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: maromolecular 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
BIOL250L	General Biology II Lab	1	Students in this course study the anatomical morphology of representative samples of the plant phyla. Experiments on photosynthesis and separation of plant pigments are carried out, plant collection and herbarium specimen. Co-requisites: BIOL 250

BIOL250	General Biology II	3	A brief study of viruses and prokaryotes, protists and fungi, and a detailed study of the plant kingdom, with particular focus on the classification, evolution, ecology, structure and function of the angiosperms and gymnosperms. 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
BIOC300	Biochemistry I (General)	4	An introduction to the chemistry of biologically important amino acids, proteins, carbohydrates, lipids, vitamins and hormones. Enzyme kinetics and catalysis, protein structure and function, and introduction to intermediary metabolism are also included. Prerequisite: BIOL & CHEM 250 or CHEM 255