School	
Major	Bachelor of Science in Biology

Major Requirements			
Code	**Title**	**Credits**	**Description**
BIOL450	Modern Topics in Biology	3	In this course, current reviews of the selected topics will be provided prior to the session date. This course will have a Journal club format, where each student is required to prepare and present an oral discussion of each of the selected articles, i.e., after an article is assigned, all students will come to class prepared to explain any section of that article.
BIOL435L	Developmental Biology Lab	1	This course is aimed to observe embryonic developmental stages for different animals
BIOL435	Developmental Biology	3	This course covers the principles of developmental biology and embryology and introduces the students to the molecular and cellular principles behind how a single cell becomes a multicellular organism with specialized tissues and organs. Moreover, students will be familiarized with some of the events which occur during animal growth and development, as the animal develops from an egg and a sperm into an adult organism. Also, students will have the chance to discover how the process of differentiation leads to many different types of cells and tissues which function in an integrated way as each new organism develops. Furthermore, this course teaches students how to experimentally approach the topics of development and embryology, and therefore emphasizes how to formulate and test hypotheses, employing different techniques.
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.
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.
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.
BIOL375L	Plant Physiology Lab	1	This course is the lab component that accompanies BIOL375. It provides hands-on experience of some of the concepts discussed in the latter course. It discusses pigment content of some plants, water potential and osmotic potential of potato tubers, cell membrane Chemical composition and permeability, mineral nutrition, gravitotropism and phototropism of plants, as well as the method used to determine the viability of seeds.
BIOL375	Plant Physiology	3	Plant Physiology is the science that studies plant function.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, plant growth regulators, plant development, plant stress physiology and plant biotechnology.
BIOL335L	Ecology Lab	1	This course is the lab component that accompanies BIOL335. It provides hands-on experience of some of the concepts discussed in the latter course. It includes field trips and discusses basic methods for estimating population size, species diversity, and population growth. It also covers topics related to plant competition, predator response, and effects on physical environment on species survival and distribution as well as the method used for constructing life tables.

BIOL335	Ecology	3	Ecology is the study of the interactions between the organisms and their environment. This course explains ecological concepts at different levels of ecological organization namely organismal ecology, population ecology and community ecology. It also describes patterns of population growth, dynamics and regulation, population interactions, species diversity in addition to geographic and global ecology.
BIOL490	Seminar	1	The aim of this course is to tutor students to present a scientific topic and to give them practice speaking in front of an audience through the delivery of a professional seminar and to observe and listen to how scientific research is presented.
BIOL315	Animal Behavior	3	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 introduces the fundamental principles of nervous system structure and function. Topics will range form factors affecting nervous physiology to nervous control of higher functions and will include the following: • nervous tissue (molecular and cellular level) • neural circuits (cell – cell interaction) • the CNS (brain and spinal cord) • the autonomic nervous system • the special senses • sensory, motor and higher associational functions
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 select a project topic, design and conduct experiments, collect data, control variables as well as present their work either in poster or oral presentation sessions.

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	Ø ªÙÙØ«ÙÙ Ø§ÙØØ¶Ø§Ø±Ø© Ø§ÙØ¹Ø±Ø¨ÙØ© Ø§ÙØ¥Ø³ÙØ§ÙÙØ© ÙØ§ØØ¯Ø© ÙÙ Ø£ÙÙ Ø§ÙØØ¶Ø§Ø±Ø§Øª ÙÙ Ø§ÙØªØ§Ø±ÙØ® Ø¨ÙØ§ Ø£ÙØ¬Ø²ØªÙ ÙÙ Ø¥Ø¨Ø¯Ø§Ø¹Ø§Øª Ø¹ÙÙÙØ© ÙØ«ÙØ§ÙÙØ© ÙØØ¶Ø§Ø±ÙØ© ØªØ±ÙØª Ø£Ø«Ø±ÙØ§ Ø§ÙØ¹Ø¸ÙÙ ÙÙ ØªØ§Ø±ÙØ® Ø§ÙØ¨Ø´Ø±ÙØ©. ØªÙØ´ÙÙÙ ÙØ°Ù Ø§ÙÙØ§Ø¯Ø© Ø§ÙØ¯Ø±Ø§Ø³ÙØ© ÙÙØ¯ÙØ©Ù Ø£Ø³Ø§Ø³ÙØ© ÙÙØªØ¹Ø±Ù ÙÙ Ø¹Ø±Ø¨Ù Ø¹ÙÙ ØªØ§Ø±ÙØ® ØØ¶Ø§Ø±ØªÙØ ÙØ§ ÙÙÙÙØªØ®Ø± Ø¨ÙØ§ ÙØØ³Ø¨Ø Ø¨ÙÙÙØ¬Ø¹Ù ÙÙÙÙØ§ ØØ§ÙØ²ÙØ§ ÙØ³ØªÙÙØ¶ Ø¨ÙÙØ§Ø¨ÙÙÙØ§ØªÙ ÙÙÙØ¯Ø±Ø§ØªÙ Ø§ÙØ¹ÙÙÙØ© Ø§ÙÙØ§ÙÙØ© ÙØ¥Ø¹Ø§Ø¯Ø© Ø§ÙØ§Ø³ØªÙÙØ§Ø¶ Ø§ÙØØ¶Ø§Ø±Ù. ÙØªØØ±Ù Ø§ÙÙØ§Ø¶Ù ÙÙÙØ§ Ø¯ÙÙ Ø´Ø¹ÙØ±Ù ÙØ§Ø¹Ù ÙÙÙØ§Ø Ø¹ÙÙ Ø£ÙÙ ÙØ°Ø§ Ø§ÙÙÙÙÙØ±ÙØ± Ø§ÙØ¯Ø±Ø§Ø³Ù ÙØØ§ÙÙÙ Ø£ÙÙÙ ÙØ³ØªØ«ÙØ± Ø§ÙÙÙØ¹Ù Ø§ÙØØ¶Ø§Ø±Ù ÙØ§ÙØ«ÙØ§ÙÙÙ Ø¹ÙØ¯ Ø§ÙØ·ÙØ§Ø¨ Ø§ÙØ¹Ø±Ø¨Ø ÙÙØ³ØªÙÙØ¯ ÙÙÙ ÙØ°Ø§ Ø§ÙÙØ®Ø²ÙÙ ÙÙØµÙØ¹ Ø£ÙÙÙÙÙØ§ Ø¬Ø¯ÙØ¯ÙØ§ ÙÙÙÙØ³ØªÙØ¨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§ÙÙØØÙ 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.

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

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.
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.
CHEM260L	Analytical Chemistry Lab	1	CHEM 260L is a laboratory course that emphasizes the application of topics covered in the CHEM 260 course. It introduces students to several common analytical techniques used to quantify analytes of interest in samples related to everyday life via acid-base titration, EDTA complexometric titration, redox titration, spectrophotometry and electrochemistry. Students will have the opportunity to conduct experiments, observe, search for informations, analyze and criticize statiscally their own analytical chemistry results.
CHEM260	Analytical Chemistry	3	This course intends to provide students with the necessary background for understanding the fundamental aspects of chemical equilibrium in aqueous media by focusing on a range of complex systems including solubility, acid/base, complex formation and electrochemistry. The scientific data obtained and findings will be evaluated by statistical methods. Moreover, in this course, we will briefly introduce a wide range of separation techniques (spectroscopy, chromatography…) to gain hands-on experience in 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.

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.

BIOL250L	General Biology II Lab	1	This course Lab covers the anatomical morphology of representatives of the different plant phyla. They will also observe different microscopic slides and differentiate between plant structures under microscope.
BIOL250	General Biology II	3	This course provides an introduction to plant biology, with particular focus on the diversity, structure, reproduction and importance of plants. Moreover, this course gives a detailed study of basic plant processes: those include germination, growth, plant transport, photosynthesis, flowering and fruiting. Also, you will have the chance to discover the various environmental influences on plant growth and development.
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.
BIOC300	Biochemistry I (General)	4	The study of human biochemistry describes how the body works, and provides a basis for understanding what can, and often does, go wrong. This course aims at providing a concise coverage of the general principles of biochemistry. It covers the metabolism of proteins, lipids and carbohydrates, the synthesis of different macromolecules in cells, the reactions they undergo, the substances produced (e.g. hormones) and, their function and fate. The course also touches upon some diseases caused by enzymes deficiencies.