

School			
Major	Bachelor of Education in Teacher Education (Biology-Chemistry)		
Major Requirements			
Code	Title	Credits	Description
CHEM310	Physical Chemistry I	3	This course will cover mostly thermodynamics and kinetics. The laws of thermodynamics will be applied to practical problems of reactivity. Examples of application to biological systems will be emphasized. Reaction rates for simple reactions (first order and second order) will be derived, and the link between reactivity and thermodynamic quantities will be given.
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.
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.
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.
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.
EDUC490	Teaching Practicum II	3	This course is designed to provide pre-service student-teachers with the opportunity of acquiring skills for effective planning, implementing, and evaluating instruction in a field-based setting. More specifically, students get opportunities of guided practice to teach under the supervision of an expert teacher. This practice teaching experience will develop the student’s self-confidence, security and commitment to teaching.

EDUC281	Learning & Developmental Theories	3	This course introduces different theoretical perspectives on learning, cognition, and cognitive development. By looking at a variety of theories, students can identify a range of principles, perspectives, and tools assist in understanding how learning takes place and how teaching should be approached in a variety of contexts.
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.
EDUC221	Introduction to Educational Psychology	3	It aims at providing the in service- teachers with facts and generalizations about human development: cognitive, social, moral, personality, and behavior and their role in learning. It also helps in-service teachers have understanding of the “whole” student in order to develop educational activities related to instructional design and classroom management, which will serve to facilitate the learning processes in various educational settings across the different subject areas and which will equip them with the necessary knowledge and tools to cater for their students’ needs at different age levels.
EDUC423	Teaching Mathematics and Sciences	3	This course is designed to provide prospective early years teachers with strategies for teaching math and science. It introduces basic principles of STEM education along with the appropriate methodologies and pedagogical skills needed to facilitate science and math learning in elementary classes. This will be mainly accomplished through learning to design inquiry-based lessons. This course will consist of lectures, discussions, demonstrations, group activities, hands-on and minds-on activities.
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.
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.
EDUC328	Introduction to Math and General Sciences Curriculum	3	The course aims at making students familiar with the term curriculum and its components: aims, general objectives, specific objectives and operational objectives and the way they are all related. It focuses on analyzing of the math and science curricula worldwide, and in particular the Lebanese curriculum of math and general science for elementary classes. It also aims at making the student capable of constructing relevant assessments and correctly evaluate them.

EDUC346	Introduction to Classroom Management	3	This course examines the role of a teacher in creating a classroom environment conducive to learning. The aim of the course is to pinpoint the crucial role of the teacher in establishing a proactive classroom environment where students stay involved in tasks by abiding by the established rules and routines, and where disciplinary issues are well tackled by resorting to effective classroom management tools. It also assists teachers in maximizing students' attention and in reducing distractions.
EDUC380	Statistical Research in Education	3	This course introduces basic sources and techniques of educational research. It is designed to help students learn how to begin to do research throughout the 6 steps in the research process: identifying research problem, reviewing the literature, specifying a purpose, collecting data, analyzing and interpreting data, and discussing the findings. It also deals with elementary descriptive statistics.
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.
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.

Core Requirements			
Code	Title	Credits	Description
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.
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.
EDIT250	Educational Technology for Teachers	3	This course provides an overview of various technology methods and explores the utilization of technology as means to facilitate instruction to maximize learning outcomes. The purpose of the course is to broaden teachers' perspective of the important role technology plays in meeting the various needs of our diverse learners.
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.
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.
EDUC405	Methods of Teaching & Testing	3	This is an introductory course for future classroom teachers. It emphasizes instructional planning, various instructional methods and strategies, and classroom evaluation procedures. Students in this course will have the opportunity to design a lesson plan using proper instructional objective. In addition, they will be exposed to different methods of teaching as to be aware of the importance of diverse methods for effective instruction. Students will be able to be acquainted with each method, the purpose behind it, how to apply it, and to specify the advantages and the disadvantages of using any. Consequently, students will be able to choose the most appropriate method for teaching different lessons. Furthermore, they will be able to assess and evaluate students while using the selected method. Finally, Students will have a comprehensive view about various assessment procedures to be able to design an applicable, authentic and efficient assessment system for their students.
EDUC440	Teaching Practicum I	3	This course is designed to provide pre-service student-teachers with the opportunity to observe a cooperating teacher in a natural classroom setting. Trainees will report on what they observe in the field-based setting and reflect on their experiences, which will ultimately help them develop themselves their teacher/professional identity.

[illegible]