

| School             |  |         |   |
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| Major              | Bachelor of Pharmacy                       |         |   |
| Major Requirements |  |         |   |
| Code               | Title                                      | Credits | Description   |
| PHAR665            | Pharmacy Practice Experience IV(PPE IV)    | 6       | Pharmacy Practice Experience III and IV (PPE III/IV) are series of fifteen weeks designed to provide students the opportunity to further develop their skills and knowledge base in pharmacy practice.<br>The internship is fifteen weeks in length, three weeks of which each student will be under the direct supervision of the onsite hospital pharmacist and assigned faculty member preceptor. The student’s major tasks will be accomplished within the hospital pharmacy premises.<br>The remaining twelve weeks are referred to as the Clinical Care Rotation, during which the intern will be assigned to a medical team in different wards. The intern will be on the floors with the health care professionals, by patient bedside and consulting charts under the supervision of onsite pharmacist and assigned faculty member.<br>Each student will complete three major rotations and one elective rotation. The length of each rotation is three weeks. Students will have also opportunity to rotate within a tertiary hospital. |
| PHAR660            | Pharmacy Practice Experience III (PPE III) | 6       | Pharmacy Practice Experience III and IV (PPE III/IV) are series of fifteen weeks designed to provide students the opportunity to further develop their skills and knowledge base in pharmacy practice.<br>The internship is fifteen weeks in length, three weeks of which each student will be under the direct supervision of the onsite hospital pharmacist and assigned faculty member preceptor. The student’s major tasks will be accomplished within the hospital pharmacy premises.<br>The remaining twelve weeks are referred to as the Clinical Care Rotation, during which the intern will be assigned to a medical team in different wards. The intern will be on the floors with the health care professionals, by patient bedside and consulting charts under the supervision of onsite pharmacist and assigned faculty member.<br>Each student will complete three major rotations and one elective rotation. The length of each rotation is three weeks. Students will have also opportunity to rotate within a tertiary hospital. |
| PHAR656            | Pharmacy Law                               | 1       | This portion of the Law and Ethics in Pharmacy Practice focuses on pharmacy law. The course will cover the Lebanese pharmacy rules and regulations that impact and regulate the practice of pharmacy. Topics including the regulation of medications, regulation of controlled substances, and the rules concerning pharmacy practice on the Lebanese territories will be extensively covered.  |

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| PHAR650 | Pharmacy Dispensing Practice                  | 2 | The pharmacy dispensing practice course is a highly interactive laboratory session inside a virtual pharmacy (simulation setting). This simulation lab aims to heighten students' knowledge about medications and patient education, and develop their communication skills. The student will learn to dispense over the counter (OTC) and prescription medications accurately and safely, counsel patients efficiently and properly, manage effectively any conflict that might arise between the pharmacist and the patient or between the pharmacist and other health care professionals (physicians, pharmacist) and acquire leadership skills.  |
| PHAR625 | Pharmacoeconomics                             | 3 | <p>This course presents an overview of the concept of pharmacoeconomics, and related models including cost-minimization analysis, cost effectiveness analysis, cost utility analysis, cost benefit analysis, and cost of illness evaluation.</p> <p>The course provides students with knowledge on different types of costs and benefits and identifies formulary decisions that are deemed necessary to regulate the pharmaceutical market.</p> <p>It will enable the students to utilize the Markov Modeling and discount rates, appraise pharmacoeconomic literature, and conduct a decision analysis plan.</p>   |
| PHAR620 | Pharmacotherapeutics VI (Hematology/Oncology) | 3 | This 3-credit course enables the students to develop knowledge regarding the pathophysiology of the most common cancer diseases, risk factors, prevention, and treatment approaches based on updated guidelines.   |
| PHAR615 | Pharmacotherapeutics V (infectious Diseases)  | 3 | <p>The traditional practice of pharmacy has evolved over the past three decades from a practice primarily focusing on the preparation of medications to a practice primarily emphasizing on rational pharmacotherapeutics. The need for selecting the most appropriate medication, regimen, and dose while minimizing problems such as drug interactions, adverse drug reactions, and IV incompatibilities has become central to this new patient focused approach.</p> <p>Endemic and epidemic infectious diseases present a challenging field to pharmacists and other healthcare professionals. Infections caused by different pathogens in different areas of the body can lead to complications if left untreated. Pharmacists have an important role in this field to rationalize treatment, prevent the emergence of antibiotics resistance, and minimize cost.</p> |
| PHAR610 | Toxicology                                    | 3 | This 3-credit course presents the basic principles of toxicology including areas of toxicology, factors affecting toxicity in humans and disposition of toxins in human body. The course also provides students with knowledge about diagnostic measures and clinical management (i.e. stabilization of vital function and specific antidotal measures) of poisonings. Poisoning with common groups of chemicals (pesticides, metals, solvents and common drugs) will be presented including, mechanism of toxicity, sources of exposure, major clinical manifestation and methods of treatment.   |

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| PHAR635 | Parenteral Dosage Forms                             | 2 | This course introduces the students to all aspects of parenteral products, and demonstrates the relevance between drug delivery optimization and therapeutic outcomes. It also describes the pharmacy environment appropriate for parenteral products preparation and sterile compounding as defined by USP Chapter <797>.  |
| PHAR606 | Non-Prescription Drugs                              | 3 | This 3-credit course develops pharmacy students' knowledge and problem solving skills needed to assess patient's health status and practice self-treatment. Also, it introduces them to nonprescription medications approved by FDA along with nonpharmacological measures recommended to treat certain conditions. It highlights on conditions where self-treatment cannot be applied and referral to a primary care provider is needed. To add, it trains them on the proper selection of nonprescription medications and the use of certain devices. It also focuses on patient education and counseling regarding self-treatment and health related issues.   |
| PHAR580 | Pharmacy Practice Experience II (PPE II)            | 6 | Pharmacy Practice Experience Courses I & II are a series of practice experience courses which introduces students to the philosophy and practice of pharmaceutical care, including patient counseling, monitoring plans, and patient outcomes, with emphasis on the role of the pharmacist as the primary manager of patient drug therapies. After the students finish their first and second professional years, they are required to actively participate in a twelve-week supervised experiential program in community pharmacy. Students are exposed to fundamental professional practice skills, have interactions with health care consumers and professionals, and become involved in the provision of pharmaceutical care.  |
| PHAR585 | Pharmacy Seminar                                    | 2 | The course is intended to improve and broaden the pharmacy students' knowledge as well as their communication skills through performing thorough research on relevant topics that represent a challenge in the medical field. In addition, this course will enable students to acquire skills in biomedical literature evaluation in which they are asked to search and conduct an evaluation for a primary literature. The early exposure of students to journal clubs during their pharmacy education is a scholastic tool that can improve students' ability to interpret up-to-date clinical evidence and apply it to practice.   |
| PHAR570 | Pharmacotherapeutics IV (Endocrinology/Dermatology) | 3 | This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common endocrinologic and women's health related disorders. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for endocrinologic and women's health related disorders through highlighting on the monitoring parameters and important medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan. |

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| PHAR565 | Pharmacotherapeutics III<br>(Cardiology/Nephrology) | 3 | <p>This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common cardiovascular and renal disorders. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for cardiovascular and renal disorders through highlighting on the monitoring parameters and important medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.</p>   |
| PHAR560 | Pharmacogenomics                                    | 3 | <p>Pharmacogenomics is a relatively young biomedical science that introduces a newly emerging, genetic-based, discipline in therapeutics. It was introduced to impact and revolutionize the practice of pharmacy. This novel biomedical science focuses on individual genetic variations and illustrates several challenges regarding the clinical integration of the role of genetic diversity into health and disease states. The primary focus of pharmacogenomics is to study the effect of genetic makeup and racial differences on drug response, adverse effects, and pharmacokinetics. It also offers the opportunity of designing new therapeutic options and new methods of using pre-existing drugs.</p> <p>This course introduces basic molecular genetics to the students and how genetics could be used to explain the possible variability in drug response. It familiarizes the students with the pharmacogenetics of drug transport and metabolism, with their relevance to clinical practice and individualization of drug therapy, along with updates on candidate pharmacogenomic testing. The course also explores the current and promising future applications of pharmacogenomics in areas of oncology, hematology, cardiovascular and neurological diseases, organ transplantation, and others. Key principles and applications of gene therapy will be reviewed. The course will help the students to interpret the results of pharmacogenomic association studies in order to comprehend variability in drug response and toxicity based on genetic polymorphism.</p> |
| PHAR555 | Pharmacology II                                     | 4 | <p>This course focuses on the drug classes that cover cardiovascular, antidiabetic, and chemotherapeutic agents. It includes a systematic study of the effects of drugs on different organ systems and disease processes, the mechanisms by which drugs produce their therapeutic and toxic effects, and the factors influencing their absorption, distribution and biological actions. Specific drugs and sites of drug action are further examined beginning with cardiovascular drugs, followed by antidiabetic agents, antifungal agents, antibiotics, and cancer chemotherapeutic agents.</p>   |

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| PHAR520 | Pharmacotherapeutics II<br>(Pulmonary/Rheumatology) | 3 | This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common pulmonary, gastrointestinal, and rheumatological diseases. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for pulmonary, gastrointestinal, and rheumatological diseases through highlighting on the monitoring parameters and important medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan. |
| PHAR515 | PharmacotherapeuticsI<br>(Neurology/Psychiatry)     | 3 | This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common neurologic and psychiatric disorders. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for psychiatric and neurologic diseases through highlighting on the monitoring parameters and important medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.  |
| PHAR510 | Biopharmaceutics&<br>Pharmacokinetics               | 4 | This course introduces the concepts of biopharmaceutics and pharmacokinetics. It highlights the process of absorption, distribution, metabolism, and excretion of drugs in order to improve the evaluation of drug delivery systems and the management of patients. It will help students to understand the clinical variability of drug response through exploring the relationships among physiological factors, compartmental models, pharmacokinetics and pharmacodynamics.   |
| PHAR505 | Pharmacology I                                      | 4 | This course introduces the underlying principles of pharmacology and provides an overview of the physiological, biochemical, and anatomical foundations for the interaction of drugs and chemicals with biological systems.<br>The course includes a systematic study of the effects of drugs on different organ systems and disease processes, the mechanisms by which drugs produce their therapeutic and toxic effects, and the factors influencing their absorption, distribution and biological actions. Specific drugs and sites of drug action are further examined beginning with the peripheral, followed by the central nervous system, and drugs used to treat inflammation.   |



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| PHAR480 | Pharmacy Practice Experience I (PPEI)            | 6 | Pharmacy Practice Experience Courses I & II are a series of practice experience courses which introduces students to the philosophy and practice of pharmaceutical care, including patient counseling, monitoring plans, and patient outcomes, with emphasis on the role of the pharmacist as the primary manager of patient drug therapies. After the students finish their first and second professional years, they are required to actively participate in a twelve-week supervised experiential program in community pharmacy. Students are exposed to fundamental professional practice skills, have interactions with health care consumers and professionals, and become involved in the provision of pharmaceutical care.                |
| PHAR465 | Interpretations of Lab Data                      | 3 | This course is an introduction to the fundamentals of interpreting laboratory test results that will illustrate how the results of a particular laboratory test should be interpreted, and allow students make accurate and critical diagnostic decisions. It provides pharmacy students with essential information on common laboratory tests used to screen for or diagnose disease, monitor the effectiveness and safety of treatment, or assess disease severity. Each laboratory test is described in terms of its clinical uses and relation to the pathophysiology of the disease.   |
| PHAR460 | Pharmacy Management & Drug Marketing             | 3 | As Pharmacy practice evolved from a product to patient orientation service, pharmacists are facing unique challenges to fulfill their professional roles and provide superior patient care and clinical services which can be made possible by pharmacists skilled in management.<br>The aim of the course is to teach pharmacy students that superior patient care and good pharmacy business are not mutually exclusive and to familiarize the student with the management functions and resources common to all pharmacy practice settings including managing people, money, operations, traditional goods and services as well as managing risks and value-added services. Also, this course will help students to acquire leadership skills. |
| PHAR456 | Introduction to Pharmacy Practice and Simulation | 3 | This course provides students with an introduction to pharmacy practice and patient assessment skills necessary in patient-centered pharmacy practice through Simulation Based Education. The aim of this course is to prepare students to operate various pharmacy services during their actual practice. Course topics include basic physical assessment techniques, interpretation of findings from laboratory tests or physical examinations and documenting findings from patient assessments. Laboratory time will be used to practice various assessment skills. The course will also build on communication and information skills presented in previous courses.   |
| PHAR450 | Medicinal Chemistry II                           | 3 | <ul style="list-style-type: none"> <li>• Medicinal Chemistry is divided into two courses: Phar 400 and Phar 450.</li> <li>• Phar 450 helps the students to explore the principal classes of prescription drugs including neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents.</li> <li>• It will familiarize the students with the indications of neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents, along with their related pharmacokinetics, pharmacodynamics and pharmacological profile.</li> </ul>  |

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| PHAR425 | Pharmacognosy & Herbal Medicine         | 3 | The course introduces students to natural products and other bioactive molecules from nature, their origin, identification, development, and usage. Furthermore, it identifies the chemical structure, classes and structure-activity relationships of natural products. Moreover the course identifies the importance of natural products as major ingredients used within drug manufacturing.  |
| PHAR420 | Physical Pharmacy                       | 3 | This 3-credit course explores the application of physical chemical principles in relation to pharmaceutical sciences. Physical and theoretical foundations are discussed and applied and problem solving is emphasized. This course helps pharmacy students in using foundational elements of mathematics, chemistry, and physics in their pharmacy-related work and study.  |
| PHAR415 | Professional Communications             | 1 | This course is designed to teach strategies students can use to improve communication with patients and other health care providers. Students will attain the essential communication skills competency to approach patients and provide care. Students are engaged in role play that directs various conflicts that might arise in community settings with diverse patient population or health care professionals. In addition students will learn and demonstrate the skills to promote and communicate health messages through pharmacy day projects. Students will also have the opportunity to work in a team while they are preparing for the pharmacy day project.   |
| PHAR410 | Drug Dosage Forms I                     | 3 | This course introduces pharmacy students to the principles, practices, and technologies applied in the preparation of pharmaceutical dosage forms and drug delivery systems. It demonstrates the interrelationships between pharmaceutical and biopharmaceutical principles, product design, formulation, manufacture, compounding, and the clinical application of the various dosage forms in patient care. Regulations and standards governing the manufacturing and compounding of pharmaceuticals such as Good Manufacturing Practice (GMP) are also discussed in this course.  |
| PHAR407 | Pharmaceutical Analysis & Biotechnology | 2 | The course introduces the fundamental principles of modern instrumental methods used in pharmaceutical analysis, including the theoretical background and calculations needed, with their applications for identifying, separating and quantifying drugs. Instrumentation discussed within this course fall into: Spectroscopic methods (UV-Visible, IR and Atomic Absorption), chromatographic methods (TLC, HPLC and GC), and electroanalytical methods. The course also provides students with knowledge about the analytical method validation parameters (precision, accuracy, linearity, limits of detection and quantitation, sensitivity and selectivity). The physiochemical properties of the analyte are presented with emphasis about the possibly interfering matrix components and control of the analytical errors. |

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| PHAR400 | Medicinal Chemistry I               | 3 | <ul style="list-style-type: none"> <li>• Medicinal Chemistry is divided into two courses: PHAR400 and PHAR450.</li> <li>• PHAR400 is the introductory course that helps the students to explore drug discovery and development. It employs basic principles of organic chemistry, biology, and biochemistry.</li> <li>• It will familiarize the students with the discovery of the mechanism of action of drugs within organisms in order to design new and advanced pharmaceutical and medicinal agents. This interdisciplinary course will highlight the importance of knowledge obtained from toxicology, pharmacology, computer simulations, and clinical practice to provide valuable insights used in developing drugs with more targeted actions and fewer side effects.</li> </ul>   |
| PHAR300 | Pharmaceutical Calculations         | 2 | This course provides the pharmacy student with the knowledge and skills needed to mix medications to obtain concentration/ dose, to convert measurements from the metric system to the apothecary system and vice versa, to calculate doses needed for pediatrics or adults, to mathematically adjust medication doses in case of renal or hepatic compromise, and to interpret correctly standard abbreviations and symbols used in prescriptions and medication orders.  |
| PHAR250 | Pharmacy Practice ,History & Ethics | 3 | This 3-credit course emphasizes upon the historical background and major milestones in the evolution of pharmacy from apothecaries to clinical pharmacy. The first part for this course deals with pharmacy history present and future. The second part deals with pharmacy practice including major medical terms and abbreviations, function for international pharmaceutical l organizations and overview about drug classes and dosage forms. The last part deals with ethical principles governing patient-pharmacist relationship.   |
| PHAR200 | Introduction to Drug Information    | 2 | <p>This course introduces students to basic principles of drug information including, medical terminologies, and drug monograph. In addition students will learn how to identify the different parts for the (SOAP note).</p> <p>The course also provides students with the knowledge to write drug consults and drug utilization review.</p> <p>The course will help students to recognize the different literature resources available, different types of a study design and apply basic biostatistics calculations.</p>  |
| PHAR205 | Quantitative Analysis               | 2 | This course introduces the fundamental principles of quantitative chemical analysis, including basic statistics, chemical equilibria (solubility, acid-base, complexation, precipitation, and redox titrations), electroanalytical techniques and introductory spectroscopy. It provides the students with experimental insights and skills in quantitative analysis through conduction of experiments with direct relevance for work in professional and academic laboratories (e.g., statistical evaluation of data, buffer and pH calculations, EDTA titrations and analysis of real samples when possible). The course also familiarizes the students to independently plan and conduct chemical analysis following proper analytical procedures and relevant safety regulations, analyze data, draw conclusions and solve problems with scientific rationale. |



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| PHAR407L | Pharmaceutical/Biotechnology Lab | 1 | <p>The course provides the students with practical experience of the instrumental methods used in pharmaceutical analysis; including UV-visible spectrophotometry, chromatographic methods (column, TLC and HPLC), polarimetric assays, conductometric titrations and enzymatic methods.</p> <p>The course presents the underlying principles guiding the instrument operation, instrument components, and the nature of the data generated by the instrument for each method discussed. Moreover, the course covers the basic principles in data analysis, error analysis and calibration.</p> |
| PHAR472  | Drug Dosage Form II              | 3 | <p>This course is the second part of the dosage forms courses that are designed to flow logically. This part will focus on the design, formulation, manufacture, and testing of suppository dosage forms and other complex or novel dosage forms and drugs that were not covered in Drug Dosage Form I.</p>   |
| PHAR472L | Compounding Lab                  | 1 | <p>This 1- credit course is the practical part of the two series of dosage form courses that deal with different formulations and drug delivery systems focusing on the rational and the significance of each dosage form.</p>  |
| PHAR435  | Dermatology and Cosmetology      | 3 | <p>This course introduces pharmacy students to important aspects of dermatologic diseases, focusing on their common manifestations and the appropriate pharmacotherapy. The course addresses the assessment, treatment and referral of disorders affecting the skin, nail, hair or mucous membranes. Since pharmacists encounter several questions regarding general hygiene and cosmetic elegance, the second part of the course focuses on pharmaceutical cosmetology that provides basic and modern knowledge of optimal skin management and hair care.</p>                                  |

#### General Education Requirements

| Code    | Title                           | Credits | Description   |
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| ENGL251 | Communication Skills            | 3       | <p>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.</p> |
| ENGL201 | Composition and Research Skills | 3       | <p>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.</p>   |

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| MATH245 | Statistics for Health Sciences | 3 | <p>"Introduction to Epidemiology &amp; 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 &amp; 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.</p> |
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| Core Requirements |                       |         |  |
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| Code              | Title                 | Credits | Description  |
| CHEM300L          | Organic Chemistry Lab | 2       | CHEM300L 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.   |
| CHEM300           | Organic Chemistry II  | 3       | <b>Course description</b><br>This course will continue the study of the fundamental principles of Organic chemistry started in CHEM 250. We will analyze in depth the theory of structure/activity relationship of conjugated systems and aromatics and their reactions such as electrophilic and nucleophilic aromatic substitution. The chemistry and properties of other functional groups such aldehydes, ketones, carboxylic acids and amines and their derivatives. Retrosynthetic analysis and detailed mechanistic aspects will be also covered.   |
| CHEM250           | Organic Chemistry I   | 3       | <b>Course description:</b><br>This course will focus on laying the fundamental principles of Organic chemistry. We will cover the theory of chemical bonding, molecular structure and physicochemical properties in organic chemistry. We will analyze in depth the concepts of acidity and basicity, inductive effect and resonance theory. Stereochemistry and nucleophilic substitution ( $S_N1$ , $S_N2$ , E1 and E2) concepts and applications will be covered in details. These principles will be applied to the chemistry of alkanes, alkyl halides, alcohols, ethers and alkenes in the first semester of organic chemistry |

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| 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.   |
| BMED445  | Pathophysiology                | 3 | <p>Pathology is an integrative biomedical science that forms the theoretical base of modern medicine.</p> <p>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.</p> <p>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.</p> <p>This Pathophysiology course is divided into three major parts.</p> <p>The first part is devoted to general concepts of disease origin and development as well as to detailed study of general pathological processes.</p> <p>The second part studies the most common systemic disorders.</p> <p>The third part of the course covers common disease processes of different organs and systems. These major parts include the following principal points</p> |
| 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.  |
| 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.   |

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| 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.  |
| 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 <b>how the system works</b> , but also a foundation for understanding how to improve its operation through appropriate nutrition, exercise, preventive medicine, <b>how to diagnose problems</b> and, where possible, <b>how to remedy them</b> . 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. |