Course Descriptions for the Compulsory Courses

Research Methods for Biomedical Sciences (7000408)

This course covers some detailed aspects of optimizing research design for clinical and basic research. The design strategies of different types of research as well as skills for critical evaluation of research studies and literature will be the primary focus. In addition, the ethics of using animals and humans will be covered in this course. The students will be trained to use some practical software programs which are essential when to come to perform either qualitative or quantitative researches these software programs include the data analysis, writing and drawing programs.

Anatomy for Pharmacy (7101204)

This course covers general anatomy (terminology, body organization and body tissues). This is in addition to skeletal, muscular, and cardiovascular, nervous, gastrointestinal, urinary, and genital systems.

Medical Physiology 1 (7102201)

These courses provide students with basic aspects of medical physiology "cardiovascular, pulmonary, renal, gastrointestinal and reproduction", in addition to principles of general physiology, the control of different organs and the coordination among them. Special emphasis will be on water, electrolyte and acid-base balance, body responses and adaptation to various stress conditions and physiological disorders. The course includes a one credit hour lab that will cover all the systems.

Pathology (7103201)

This course covers the principles of the discipline of pathology. Disease is presented by organ system. The method of instruction includes lectures, demonstrations, group discussions, laboratories and autopsy participation.

Clinical chemistry case study (7103406)

The course includes a case-study approach to present the fundamentals of biochemistry and molecular biology in the context of human disease. Cases will be carefully selected to cover common diseases and important principles. These cases will be supplemented by clinical descriptions of each disease and a comprehensive discussion of the underlying pathophysiological mechanisms and associated enzymatic and chemical alterations in tissues and body fluids.

Pharmaceutical Immunology (7103906)

This course concentrates on the basic and clinical science of the immune system and its relationship to other sciences and biological systems of mammals. The first part will concentrate on function-structure relationship of the immune system and its components such as the lymphoid tissue and cells, as well as the development and function of the immune system. The second part concentrates on the clinical science of the immune system and its role in the prevention, causation and diagnosis of human diseases such as cancer, autoimmune disease and other topics.

Advance Medical Physiology (7103907)

This Course is designed to provide the students with basic aspects of medical physiology including renal physiology and body fluids, gastrointestinal physiology, endocrine system and reproductive physiology. On the other hand, it discuss the pathophysiological aspects of body system taught in this course.

General Biology for Health Sciences (7104101)

An elementary course in general and cell biology designed to provide medical students with basic biological principles and understanding of various biological processes that govern life. The topics include the structure and function of macromolecules, flow and transformation of energy, structure and function of sub-cellular organelles, human systems and their function and basic knowledge in genetics, histology and microbiology.

Principles of General & Metabolic Biochemistry (7104210)

An integrated function of the human body is considered ranging widely from cellular to higher organ-system levels. This course will cover the molecular composition of living cells, the chemical reactions that biological components undergo the regulation of these reactions and the nutrients that are needed by the living cells. The course material covers bioenergetics and intermediary metabolism of carbohydrates, lipids and proteins and their enzymatic regulation. It is a fundamental biological and medical science course that provides an understanding to cell biology, microbiology, nutrition, pharmacology, pathology and physiology at the molecular level. The course has one credit hour lab.

Principles of Biochemistry and Metabolic Biochemistry Lab (7104211)

This course is designed for students follow the medical laboratory program only. This is constructed in a manner to cover the essential lab methods and major laboratory techniques which will provide student with comprehensive understanding of major experiments done for carbohydrates, lipid, and protein. In addition to the enzyme kinetic as well as the basis of molecular biology.

General Microbiology + Lab (7105403 + 7105404)

The first part introduces medical students to basic concepts in microbiology including, bacteriology, virology, mycology and Parasitology. The second part concentrates on medical microbiology and provides core knowledge of infectious disease processes affecting each organ system, as well as working knowledge of the appropriate clinical laboratory investigations. The course has one credit hour laboratory, which covers a variety of microbiological and immunological techniques, with experiments designed to illustrate major concepts of bacteriology, virology, mycology and immunology.

Medical nutrition (7106301)

This course includes normal and therapeutic nutrition. The role of nutrition in promoting wellness and regaining wellness will be emphasized. Nutritional care of clients with abnormal reactions due to a single or multiple problems will be covered.

Furthermore, common nutritional problems in Arab World as well as nutritional education to individuals, families, and communities will be emphasized.

First Aid (7227102)

This is an introductory course which aims at teaching essential skills needed in emergency cases and the methods of providing patients with first aid prior to later treatment. It also teaches appropriate behaviour during sudden critical situations such as bleeding and burns and how to prevent these dangers

Pharmacy ethics and professionalism (7227206)

This course, as the title suggests, emphasizes the ethical principles upon which the medical professions and pharmacy in particular rest. The course looks at the nature and place of pharmaceutical services in society, and the moral standards and professionalism expected from a pharmacist.

Clinical pychology (7227301)

This covers physchological topics mainly how to deal with patients with physchiatric disorders

Pharmacology 1 + Pharmacology 2 (7301301 + 7301302)

These courses introduce medical student to the pharmacological concepts of drugs and other xenobiotics action. The classification, mechanism of action, therapeutic uses and toxic effects of pharmacological agents will be stressed. Discussion of representative examples of major drug classes will be emphasized, and treatment modalities, whenever appropriate will be presented. This basic course is planned to assist the student, via lectures, clinical correlative discussions and independent study, to be able to understand pharmacological therapy in the clinical phase of medical education.

Pharmacotherapy I (7301401)

This course is designed to introduce the pharmacy student to the study of pharmacotherapy. It will provide introductory information designed to assist the student to begin understanding the rationale upon which many drug therapy decisions are based. Principles, concepts, processes, and skills in pharmacotherapy will be emphasized. The course provides a didactic framework for the therapeutic management of a number of common diseases, including cardiovascular diseases

and renal diseases. Therapeutic topics and case studies will be used to provide students with the opportunity to apply these skills.

Pharmacotherapy II (7301402)

This is the second course in a sequence of the four pharmacotherapy courses in the curriculum. This course provides a didactic framework for the therapeutic management of a number of common diseases, including endocrine disorders, gastrointestinal disorders, and respiratory disorders. With a comprehensive background related to the pathophysiology, pharmacology, pharmacokinetics of the medications used.

Pharmaceutical care I (7301403)

This course introduces the students to medical terminology, abbreviations, communication with patients, drug data collection in the clinical environment. Students will be given drug profiles and virtual prescriptions and will be trained on how to interpret and analyze the profile from all aspects.

Pharmaceutical care II (7301404)

In this course, students will be taught pharmaceutical care skills with special focus on: patient communication, drug history of the patient, evaluation and interpretation of lab results and prescribed drugs.

Clinical use of antibiotics (7301407)

The course covers antimicrobial regimen selection based on the most likely pathogens and suitable treatment for a group of infectious diseases.

Clinical toxicology cases (7301408)

This course includes the basic and clinical principles of toxicology. Absorption and mechanism of intoxication by all types of toxicants are studied. Poison management and proper clinical measures for treatment of poisoning is included. Analytical and clinical investigation of poisoning is also discussed.

Pharmacotherapy III (7301501)

This is the third course in a sequence of 4 pharmacotherapy courses in the curriculum. The areas of therapeutic focus in this part include; infectious diseases, hematology and oncology, and endocrine/metabolic disorders.

Pharmacotherapy IV (7301502)

The areas of therapeutic focus in this part include; neurological and psychiatric diseases; bone and joint diseases, women's health and dermatological conditions.

Drug information (7301504)

In this course the student will learn how to look up drug data and information from different resources. The student will learn how to keep updated regarding recent advances in the field of pharmacy and how to evaluate modern pharmacy literature. Student will do presentations that compare the efficacy of various drugs. Students will also be engaged in discussions with the medical team regarding latest medical and drug news as well as the ethical and professional conduct.

Pharmacotherapy V (7301518)

This course covers selected topics that were not covered in the previous pharmacotherapy courses.

Clinical Pharmacotherapy and biochemistry cases (7301519)

In this course, various case reports in clinical chemistry and pharmacotherapy for patients admitted to the hospital or cases published in medical and pharmaceutical journals will be presented by the students as seminars.

Communication skills (7302301)

The course emphasizes the most important communication skills to enable the student to play a vital role in patient education and thus improving patient understanding and compliance.

Patient education and counseling (7302302)

The course explores the basic principles and concepts of medication education. It also focuses on the methods used for healthy or sick individuals and/or group(s) in the community or in health care institutions.

Pharmacy law and legalization (7302501)

This course is a study of laws and regulations related to all aspects of the profession of pharmacy, namely legal and ethical principles. Emphasis is placed on the evaluation of non-prescription medications and appliances.

Pharmaceutical marketing and drug promotion (7302502)

This course covers the required skills for medical representatives in pharmaceutical marketing & suitable drug promotion activities.

Community pharmacy clerkship (7302505)

In this course the student will have practical training in community & hospital pharmacies during the regular working hours (8 hours a day). The student will be supervised by the pharmacist running the pharmacy and a faculty member. The student is will go through structured training where he/she has to cover different aspects of pharmacy organization and prescription handling as well as some administrative and financial affairs related to pharmacy practice. The major part of the practical training will require the student to know all the important classes of medications used in the treatment of various diseases. That will also involve the knowledge of trade names, manufacturers, suppliers and distributors of such medications and other related medical products. The student will not be allowed to register for other classes during the practical training session.

Hospital pharmacy (7302506)

Hospital pharmacy will discuss the development, functions, organization and administration of pharmaceutical services within the hospital. Methods of drug distribution are emphasized. In the first part, intravenous preparations are discussed regarding their therapeutic uses. In the second part, preparations of sterile medications, preparations of chemotherapy mixtures and total parenteral nutrition are discussed.

Over the counter medications (7302507)

This course aims at introducing students to medications that can be dispensed to patients without prescription. These drugs include antacids, anthelmintics, antidiarrhea, laxative products, emetic and anti-emetic drugs; hemorrhoid products; cold, cough and allergy products; asthma products; analgesics and NSAIDS; vitamins and minerals; infant formula products; weight control products; menstrual products, dental products, insect sting and bite products; burns and sunburn products, skin products, infant products, foot care products. This will be in addition to answering questions raised by patients seeking self-treatment concerning symptoms, aspects of patient counseling in the safe and effective use of products dispensed to him/her and side effects of this class of drugs.

Clerkship I + Clerkship II + Clerkship III + Clerkship IV (7302508 + 7302509 + 7302601 + 7302602)

These clerkships provide the means by which the students will extend their clinical knowledge and skills. The clinical attachment with the consultant in the ward and outpatient department will present numerous opportunities for learning. The student must take and fully use these opportunities to gain maximum benefit from the program and to progress satisfactorily in the course. The clerkships include clinical attachments in the following specialties: Internal Medicine, General Surgery, Intensive Care Unit, Obstetrics and Gynecology, Pediatrics, Oncology, ENT, Special Surgery, Emergency Medicine and Psychiatrics. Within each of the rotations the student will be required to produce a detailed evaluation of a wide range of patients; evaluate critically drug therapy and increase the effectiveness of the pharmacy input to the ward.

Medicinal Chemistry I (7303301)

This course is concerned with the study of the physicochemical properties of drugs, their absorption, distribution, metabolism and elimination. This course also includes the principles of structure activity relationship of drugs. The course is also a study of all drugs affecting the Autonomic Nervous System.

Medicinal Chemistry II (7303302)

This course is a study of certain classes of drugs and their mechanism of action and their structure activity relationship. Drugs to be studied include cardio-vascular drugs, asthma medications, rheumatoid arthritis treatment, NSAID'S, autacoids, histamine and antihistamines, endocrine medicine, agents affecting calcium homeostssis, anti-infective agents, cancer and immune modulating drugs.

Naturaceutical (7303401)

This course provides the students with basic knowledge about natural products (plants, marine products, fungus, bacteria) which have pharmaceutical uses, it focuses on their names, active constituents, mode of action, side effects, drugs interactions, contra indications, and the medicines in the Palestinian pharmaceutical market that are made of them.

Phytotherapy (7303406)

This course focuses on evidence based phytogenic compounds which have therapeutic or physiological effects on the human body systems (GIT, CVS, CNS, Endocrine system, Respiratory system ,Reproductive system and others).

Physical pharmacy I (7304201)

This course covers six major topics: states of matter; thermodynamics; solutions of non-electrolytes; solutions of electrolytes; kinetics, and solubility and distribution phenomena. The course includes a considerable number of subtopics related to each of the six major topics.

Pharmaceutics I (7304301)

This course covers several topics: different pharmaceutical calculations (including calculation of concentration, reductions and quantities) pharmaceutical solutions (iso-osmosis …); ways of calculating children's dosages; Latin abbreviations; methods of drug storage; introduction to pharmaceutical forms; ways of calculating date of expiry; ways of drug decomposition; drug stability; introduction to movement of drug in human body; methods of taking drugs.

Pharmaceutics II (7304302)

Students are introduced to a number of topics: Pharmaceutical compounding principles of various dosage forms: solid, semi-solid and liquid dosage forms; selection of ingredients, mechanisms of action; packaging, storage, closures and tests.

Pharmaceutics Lab. (7304303)

This course involves processing a prescription or medication order, the preparation and dispensing of pharmaceutical solution, emulsion, suspension, semi-solid and solid dosage forms and the development and practice of the patient counseling skills necessary for proper use of the compounded product. During the laboratory session, emphasis will be placed on the selection of proper inactive materials, based on physico-chemical properties, for use in the extemporaneous compounding preparation.

Industrial pharmacy (7304401)

This course aims at introducing students to the world of pharmaceutical industry; principles and basis of good manufacturing in addition to unit operations preparation techniques that affect the manufacturing of various pharmaceutical dosage forms. Students also learn about pre-formulation tests, stability protocols and quality control and GMP regulations to be followed in pharmaceutical plants in order to produce products with satisfactory if not good quality and deliver these products in the required form and manner.

Pharmacokinetics (7304501)

This course is a description of the bases of therapeutic drug monitoring by discussing the pharmacokinetics of drugs following intravenous administration, intravenous infusion, oral and/or extra vascular administration of drugs that undergo first-order and zero-order elimination kinetics, emphasizing one-compartment and two-compartment models. The basis of bioavailability and bioequivalence studies will be emphasized. This science is considered the basis of therapeutic drug monitoring.

Clinical pharmacokinetics (7304503)

This course will discuss principles of clinical pharmacokinetics and their application to the therapy of various states of disease. Changes in pharmacokinetic parameters due to diseases and therapeutic drug monitoring are also discussed. The course will also provide the student with literature review of the pharmacokinetic parameters for many of the most commonly monitored drugs. The principles of Therapeutic Drug Monitoring (TDM) will be emphasized through effective use of class lectures, presentations and referring to patients' records to present it as case studies. Such presentations and case studies will be steered so that it will emphasize the need to obtain accurate plasma level measurements in such a way that patient-specific pharmacokinetic parameters can be derived and to appreciate the degree of inter- and intra-subject variability.

Pharmaceutical calculations (7304504)

This course will discuss the most important aspects of pharmaceutical calculations required to perform better pharmaceutical services. These calculations include dose adjustment, dilution & concentration, isotonic solution, electrolyte solution, rate of flow of I.V solutions and mathematical conversions.

Biotechnology product (7304505)

This course deals with molecular and genetic biochemical technology with emphasis on medical uses of drugs manufactured by the biotechnological methods. This course will also deal with diseases treated with gene therapy.

Clinical Pharmaceutical Compounding (7304605)

This course provides an in-depth understanding of pharmaceutical compounding, focusing on the preparation of customized medications to meet individual patient needs. Students will learn the principles of sterile and non-sterile compounding, including dosage form design, ingredient selection, and quality control. The course covers regulatory requirements, safety considerations, and techniques for preparing compounded formulations such as creams, ointments, suspensions, capsules, and injectables. Case studies and hands-on laboratory practice will enhance students' ability to apply compounding skills in clinical settings.

Pharm D research project (7304606)

The students will register for this course on the summer semester of the fifth year. The work on the project will continue until the second semester of the sixth year. He student has to present his work in front of a committee and passing grade or a continuation will be assigned to the project.

Biostatistics (10216235)

The course covers the topics the following chapters: Relevance and principles of Biostatistics with application in Medicine and Biology, descriptive statistics, sampling and sampling distributions, estimation of parameters, probability and probability distribution with emphasis on the normal. It also focuses on tests of hypotheses for one or two means and one or two proportions, measures of association between two continuous variables (correlation and regression) ,two discrete variables (chi-square) and non-parametric tests commonly used in medicine and biology

General Chemistry for Health Science + Lab (10231114 + 10231115)

A comprehensive survey of chemistry for premedical students which emphasize the principles underlying the formation and interaction of chemical substances: stoichiometry, states of matter, thermo-chemistry, atomic and molecular structure, intermolecular forces, solutions, thermodynamics, kinetics, chemical equilibrium, acids and bases, electrochemistry and introduction to organic and biological chemistry. The course includes one credit hour laboratory.

Analytical chemistry for health sciences (10231213)

A theoretical compulsory course of three lectures per week that includes an introduction to the science of pharmaceutical analysis and focuses on methods of quantitative pharmacological analysis using different standard methods approved by international pharmacopoeias, such as titration methods of all kinds. The course also introduces the student to several technologies used in pharmaceutical analysis and will provide students with the scientific rules necessary to judge the accuracy and correctness of data and readings resulting from pharmaceutical analysis in addition to discussing the correct methods used in the quantitative calculations of the active substance or impurities in medicines

Analytical chemistry for health sciences Lab (10231214)

A laboratory compulsory course that includes a set of experiments. It is designed for the practical application of the principles and theories covered in the theoretical pharmaceutical analysis course. Where the student performs a number of experiments in which several standard methods are used in the analysis of drugs, and the student in this course will be practically trained on how to judge the accuracy and validity of the readings resulting from practical experiments. Many of the methods of analysis that will be applied in this laboratory are methods approved by international pharmacopoeias

Organic Chemistry I for Health Science (10231236 + 10231239)

A theoretical compulsory course of three lectures per week aims to increase the student's awareness of the fundamentals of pharmaceutical organic chemistry, and to activate the student's understanding of the language of pharmaceutical chemists. This course will discuss cyclic and cyclic hydrocarbons. IUPAC naming principles for pharmaceutical organic compounds. Aliphatic unsaturated hydrocarbons, halogen compounds. Steroidal shapes of pharmaceutical organic compounds. This course also covers the basic techniques used in the synthesis of pharmaceutical compounds. In addition, the substitution and elimination reactions used in the preparation of pharmaceutical compounds, the mechanisms behind these reactions and their relationship in the chemical manufacture of drugs and other pharmaceutical materials will be covered. This information will prepare the student to study the organic chemistry course 2.

Practical Organic Chemistry I for Health Science (10231239)

A laboratory compulsory course that aims to give students a good understanding of the principles of practical pharmaceutical organic chemistry and the ability to solve problems based on pharmaceutical chemistry. The course also provides the ability to investigate experiments, analyze data, and write scientific reports. The course is divided into two parts: The first includes physical tests used to identify effective drugs. In the second part, the course will cover the basic techniques for the synthesis of bioactive compounds, drugs and adjuvants

Instrumental analysis (10231313)

This course is considered complementary to the analytical chemistry course for health sciences, as it deals with a full explanation of the student's instrument about the devices used in the quantitative and qualitative analysis of the active substance and impurities present in pharmaceutical preparations. Emphasis is also placed on the methods adopted by the international pharmacopoeia in pharmaceutical analysis to link the course in the pharmaceutical industrial labor market.

Practical Instrumental analysis (10231314)

A compulsory course involves three practical hour laboratory per week. It covers basic instrumental methods used in quantitative chemical analysis, such as: polarimetry, refractometry, pH - titrations, potentiometry, conductometry, electrogravimetry, coulometry and spectrometry

Organic chemistry II for Health Science (10231330)

This course includes the study of cyclic, non-aromatic and aromatic compounds and their chemical reactions, types of displacement, reaction mechanisms and analytical methods of different types; identification of compounds, binary structure; the course is also a study of functional groups such as acids, and their derivatives, heterocyclic compounds, amines, carboxyticion reactions; phenols, alkenes and reaction mechanisms of the aforementioned.