University of Petra
Faculty of Pharmacy and Medical Technology

501101 First Aid (3-3-0)

Pre-Requisite:

This course enables the students to understand the basic information of first aid in cases of emergency, in order to: preserve life, reduce suffering, prevent deterioration of the injured individual. By having some first aid training and knowing cardiopulmonary resuscitation (CPR), the student can have a major impact to the successful outcome of a medical emergency.

501211 Pharmaceutical Organic Chemistry (4-3-1)

Pre-Requisite: 101115

This course covers the basic and fundamental principles of organic chemistry, allowing the student to begin understanding the language of organic chemists. A broad overview of the properties and characteristics of organic molecules is provided, and several key reactions and reaction mechanisms are discussed.

501241 Analytical Chemistry for Medical Sciences (3-2-1)

Pre-Requisite: 101103

This course is designed to recognize the importance of analysis in pharmaceutical industry, to understand the titration as principle for quantitative analysis, to understand chemical principles behind the quantitative analysis of medicinal products and to be familiar with the laboratory practice that have to be considered for accurate analytical work.

501242 Physical Pharmacy 1 (2-2-0)

Pre-Requisite: 101103

This course aims at introducing the student to the different physical aspects related to drugs in different forms such as solid, liquid, gas, or disperse systems.

501256 Pharmacognosy (2-2-0)

Pre-Requisite: 503102

The course includes, the taxonomical classification, morphological, anatomical description of natural drugs, the methods for collection, drying and preparation, storage and preservation, the chemical constituents and uses.

502211 Biochemistry1 (3-3-0)

Pre-Requisite: 101113

This course is designed to teach the students the chemical and physical properties of bio-molecules, und3erstand the concept of bioenergetics and the pathways of central metabolism and their major function in the biological system, to know the fundamental aspects of enzymes and their regulation, and this in turn is necessarily preceded by lectures on protein structure and to understand the structure and functions of nucleotides and more specifically the nucleic acids. A brief introduction about DNA metabolism and its regulation and RNA transcription and regulation of gene expression is discussed.

502212 Biochemistry 2 (3-2-1)

Prerequisite: 502211

Use the knowledge gained in Biochemistry 1, this course is designed to understand the basic concept of anabolic reactions of the major bio-molecules; carbohydrates, lipids, proteins and nucleotides and their metabolism.

502225 Microbiology 1 (3-2-1)

Prerequisite: 503102

This course aims at introducing the students to the world of microorganisms. Microbial morphology, growth, and physiology will be explored. Microbial control including physical and chemical methods will be considered in detail. The Genetics of microorganisms and its applications will be explained.

502235 Anatomy & Histology (3-2-1)

Pre-Requisite: 503102

The objective of this course is to provide the student with the body parts, organs, and tissues. Basic components and functions of cells and tissue types will be studied.

502236 Physiology (4-3-1)

Pre- Requisite: 502235

This course aims to cover the physiological concepts of all organs/tissues and their functions with emphasis on the relationship of structure to function and how links & interaction between body systems contribute to homeostasis of the body as a whole. The student develops an understanding of normal physiological processes with special reference on situations in which diseases or disorders impair these processes.

502346 Microbiology 2 (2-2-0)

Pre-Requisite: 502225

This part aims at familiarizing pharmacy students with fungi and human parasites, their morphology, life cycle, mode of transmission and pathogenesis of parasitic diseases and their treatment.

502318 Pathophysiology (3-3-0)

Pre-Requisite: 502232

This course is designed to study of concepts of altered health with emphasis on wound healing, cell differentiation, neoplasm, body defenses, temperature regulation., blood flow and cardiac function. Metabolism and gastrointestinal disorders, fluid and electrolytes, respiratory & renal altered functions will be discussed.

501311 Medicinal chemistry (1) (3-3-0)

Pre-Requisite: 501211

The course introduces the student to the role of physical chemical properties in relation to biological activity. Also explains the various metabolic processes that drug (s) undergo in our biological system. We deal with Autonomic nervous system (cholinergic, adrenergic, agonist and antagonists). Diseases like Alzheimer, Asthma and glaucoma are included.

501312 Medicinal chemistry (2) (3-3-0)

Pre-Requisite: 501311

In this course the chemistry, structural activity relationships, drug receptors or enzymes interaction to induce pharmacological activity (ies) in the area of antihistaminic, diuretics, cardiovascular system, central nervous systems endocrine and others.

501317 Phytochemistry 1 (2-2-0)

Pre- Requisite: 501256 & 501211

This course intends to study the principles of medicinal plants, to furnish the chemical bases of the modern phytotherapy underlining the steps, the fundamental techniques of phytochemical screening, the biosynthesis and the chemical and chemical-physics properties of the principal classes of natural mixtures used in therapy.

501351 Pharmacology (I) (3-3-0)

Pre-Requisite : 502212

This course deals with the general & basic pharmacological principles that will enable the students to evaluate and use drugs effectively and safely. The autonomic and the central nervous systems in addition to other systems are discussed in this course.

501352 Pharmacology 2 (3-2-1)

Pre-Requisite: 501351

This course is a continuation to pharmacology 1 with emphasis on anti microbial agents, anti inflammatory drugs, respiratory & gastrointestinal agents along with other topics are also encountered.

501321 Pharmacy Ethics and Jurisprudence (2-2-0)

Pre-Requisite: Third Year

This course enable the student to understand the basic legislation which control his work as pharmacist in various pharmaceutical area, and the ethics which formulate his relationship with the patient, colleges, and other health personnel in order to deliver his pharmaceutical services in good way.

501345 Physical Pharmacy 2 (3-2-1)

Pre- Requisite: 501242

This course is a continuation of Physical Pharmacy 1 where the student will be further introduced to the different physical aspects related to materials whether solids, liquids, gases, solutions or disperse systems. Building this kind of knowledge is a vital backbone for having the proper foundation in order to prepare rationally designed and well made stable dosage forms. It is also essential in order to build the capacity to understand, deal with and attempt to avoid causes of instability.

501346 Pharmaceutical Dosage Forms and Calculation (4-2-1)

Pre-Requisite: 501345

This course aims to introduce the student to the different pharmaceutical dosage forms including their way of preparation, properties and stability whether during formulation or during storage and dispensing. All possible types of calculations which can be encountered in compounding a prescription will be addressed and examples will be solved. An attempt to relate information taken in Physical Pharmacy 2 to those dealt with in this course will be made in order to try and connect the pure scientific aspects of the topic to its implementation in practice during formulation and dispensing of a certain dosage form.

502435 Clinical Biochemistry (3-3-0)

Pre- Requisite: 502212 & 502318

This course enables the students to understand the clinical concept of biochemistry (clinical chemistry) and the use of clinical laboratory results to differentiate between health and disease. This includes the understanding of problem solving and clinical cases of clinical.

502445 Pathology and Immunology (2-2-0)

Pre-Requisite: 502346 & 502318

This course enables the students to understand the basic mechanism of pathological diseases with the understanding of the concepts and components of the immune system, antigens recognition molecules, physiology of the immune system, innate immunity, and how the immune system plays part in the cure and/or pathogenesis of diseases.

501414 Phytochemistry 2 **(3-2-1)**

Pre- Requisite: 501317

The course is a continuation of Phytochemistry 1.

501415 Medicinal Chemistry 3 **(3-3-0)**

Pre-Requisite: 501312

The course deals with the chemistry, mechanism of action(s) , stability and structural aspects of drugs used in treatment of cancer and bacterial and viral infections.

501413 Instrumental Analysis **(3-1-2)**

Pre-Requisite: 501241

Course Objectives: After completion of this course, the student should be able to Differentiate between quantitative and qualitative analysis. Understand the applications and the use of instrumental techniques in purity analysis, assay methodology and structural elucidation .

501421 Industrial Pharmacy **(4-3-1)**

Pre-Requisite : 501346

This course is designed to familiarize the students with the design , development, manufacturing, Processing problems and evaluation of stable and bioavailable various uncoated and coated tablets, hard and soft capsules, microcapsules using up-to – date technology and modern excipient. The course also covers some pharmaceutical operations used in pharmaceutical industry, such as mixing, drying, milling and particle size analysis.

501445 Non-Prescription Drugs **(3-3-0)**

Pre-Requisite: 501346 & 501352

This course was designed to provide the student with the basic and essential information as: Provide information on the most common self diagnosed conditions, recognize the active ingredients utilized in various over the counter (OTC) drugs, assist the self medicating patient in selecting the most suitable drug or the most appropriate course action, Ensure that the patient is aware of the necessary information for safe and effective use of the drugs, Describe the side effect and precautions of OTC drugs. Recommend the proper dosage and instructions related to use of OTC drugs.

501442 Biopharmacy **(2-2-0)**

Pre-Requisite : 501346

Biopharmaceutics concerns the study of the interrelationship of the physico-chemical properties of the drug, the dosage form and the route of administration with the clinical response observed after the administration of the drug.

501443 Pharmacokinetics (3-2-1)

Pre-Requisite : 501442

Pharmacokinetic course deals with the study of the time course of drug liberation, absoprion , distribution, metabolism, excretion and response (LADMER process) and the relation of these with the onset, intesity and duration of action of drugs. The theortical aspect of pharamcokinetic involves the development of various mathematical relationships(one or two compartment models) to stimulate the above rate processes after using different route of administration.

501452 Pharmacology 3 (2-2-0)

Pre-Requisite: 501352

This course is a continuation to pharmacology 2.

501444 Pharmaceutical Microbiology (3-3-0)

Pre-Requisite 501342 & 502342

This course was designed to provide the student with the basic and essential information on the pharmaceutical aspect of microbiology this include: commonly used disinfectants antiseptics and preservatives, methods of sterilization, microbial contamination and spoilage of pharmaceutical products, aseptic area and aseptic processing and employing microorganisms in different assays.

501513 Pharmaceutical Marketing (3-3-0)

Pre-Requisite: 120 credit hours

By the end of this course the student should have a better understanding about selling concepts and techniques, with special emphasis on pharmaceutical detailing & selling in pharmacies. This course will introduce also the essentials of marketing principles and concepts.

501526 Clinical Pharmacy 1 (3-3-0)

Pre-Requisite: 501452

This course deals with principles of drug therapy, factors modifying dosage of drugs, drug-drug interactions, management of common diseases such as hypertension, angina pectoris, atherosclerosis diabetes, asthma, pain.

501527 Clinical Pharmacy 2 (3-3-0)

Pre-Requisite: 501527

This course is a continuation of Clinical Pharmacy 2 and covering certain diseases such as management of peptic ulcer, Parkinson, epilepsy and discussing the chemical mediators in the central nervous system and their relation to disease.

501524 Communication Skills in Pharmacy (3-3-0)
Pre-Requisite: Fourth Year

Pharmacy Communications is a course designed to teach future pharmacists the skills to effectively communicate with, teach and counsel patients about their medications and health.

501528 Graduation Project (2-0-2)
Pre-Requisite: Fifth Year

This subject aims to identify the student with the scientific method and how this method is applied to develop a research project. The aim is to train students to carry out independent research in Pharmacy. The project can be theoretical or practical in nature.

501531 Toxicology (3-3-0)
Pre- Requisite: 501452

The objective of this study course is to offer an authoritative introduction to the modern science of toxicology. The study covers the general principles of toxicology, Its historical aspects, classification of toxic substances, chemical disposition of drugs and toxic xenobiotics in biological systems, organ toxicology, specific topics in toxicology, risk management & risk assessment, and finally the clinical toxicology, which involves poisoning cases with proper treatments is offered for the students.

501560 Selected Topics in Pharmacology (3-3-0)
Prerequisite: 504452

This course is designed to describe certain topics in pharmacology such as immuno-pharmacology, prenatal and pediatric pharmacology, geriatric and dermatological pharmacology and basic and clinical evaluation of new drugs.

501561 Clinical Pharmacokinetics (3-2-1)
Prerequisite: 501443

This subject is emphasis on the monitoring of drug therapy, using serum drug concentrations as a guide. The plasma drug concentrations as well as the changes in plasma drug concentrations which occur over time can be predicted by the using of pharmacokinetics and biopharmaceutics principle. The monitoring process must be applied rationally to specific patient.

501562 Drug Information System (3-2-1)
Prerequisite: 501451

The course includes the application and the use of computers in retrieving information related to drug substances, in addition to the information related to toxic substances especially those related to drug products.

501563 Quality Assurance of Drugs (3-3-0)

Prerequisite: 501421

The course includes studying Good Manufacturing Practice (GMP), pharmaceutical industry, GMP and the law, documentation, labels, cleanliness, cross contamination, elements of Quality Control, personnel and instrumentation control.
new possible modifications.

501569 Cosmetics (3-3-0)

Pre-Requisite: 501346

This course deals with the different cosmetic preparations while addressing the method of preparation, the purpose of the product and drawing attention to any stability problems that can be encountered during manufacturing. The course will emphasize the benefits of cosmetic products while differentiating between their real values and those that are claimed to exist for marketing purposes.

501570 Herbal Medicine (3-3-0)

Pre-Requisite: 501313

The course includes the study of the therapeutic effects of the natural constituents in plants and the relation between the chemical structure of these constituents and the therapeutic actions on diseases.

501572 Advanced Industrial Pharmacy (3-3-0)

Pre-Requisite: 501421

This course is designed to familiarize the students with the organization structure of pharmaceutical manufacturing companies, duties and responsibilities of various departments, such as, research & development, production, quality affairs and marketing. The course also covers the stages of new drug development and approval process by FDA. .In addition, it includes the design and development of various dosage forms, advanced drug delivery systems and packaging of these dosage forms.

501574 Pharmaceutical Care (3-3-0)

Pre-Requisite: 501521

This course is designed to understand what pharmaceutical care means? And how the practitioner takes responsibility for a patient's drug therapy needs and to held accountable for this commitment with emphasis on the provision of education which facilitates development of pharmaceutical care expertise and practice at a local level. The student will understand how to communicate effectively with patients and their families, as well as professional medical personnel and to develop personal skills in the use of technology in the educational processes.

501575 Clinical Nutrition (3-3-0)

Pre-Requisite: 502435

This course is designed to provide the pharmacy student with a useful orientation to pharmacology in order to give the basic information concerning general principles, theories & facts about drugs in terms of specific effects on bodily systems, clinical uses, and adverse effects.

501584 Drug Design (3-3-0)

Pre-Requisite: 501312

The course covers the various physical, chemical, biochemical and receptors, concepts that are utilized in the construction of a drug. The students are stimulated to think of certain.

501585 Pharmaceutical Analysis (3-3-0)

Pre-Requisite: 501413

This advanced course focuses on methods development based mainly on isolation and/or chromatography separation (HPLC, GC), coupled to suitable detection method, to proceed in qualitative and quantitative analyses. The course presents an overview of modern techniques used widely in pharmaceutical industry for analysis of drug substances and drug products.

501586 Selected Topics in Pharmacy (3-3-0)

Pre-Requisite: Fifth year

This course covers selected topics in pharmacy that are not fully covered in other courses. This covers the new trends in pharmaceutical sciences.

501587 Radio-Pharmaceuticals (3-3-0)

Pre-Requisite: Fifth year

This course covers the basics of radiation biology followed by the application of radiopharmaceuticals in diagnosis and therapy of diseases. In addition, topics include the preparation, handling, disposition, and quality control of clinically useful radiopharmaceuticals.

501591 Biotechnology (3-3-1)

Pre-Requisite: Fifth Year

Pharmaceutical Biotechnology is a science for developing new pharmaceutical products using number of different disciplines such as molecular biology, molecular genetics, biochemistry, immunology, and pharmaceutical sciences. This course should promote and familiarize the student with biotechnology techniques, products and gene manipulation