

Undergrad Courses	Postgrad Courses	
	Mandatory courses	Elective/ optional courses
PT 101C Pharmacy Orientation		
PT 202C Physical Pharmacy	المتقدمة الدواء حركية و الحيوية الصيدلة Advanced Biopharmaceutics and Pharmacokinetics	التجميل مستحضرات Cosmetics and toiletries
PT 303C Pharmaceutics I	الجيد الدوائى التصنيع أساليب Good Manufacturing Practice	الدواء اقتصاديات و الإدارة Management and economics of Drugs
PT 404C Pharmaceutics II	الصيدلية التحليل Pharmaceutical Analysis	الطبيعية الصيدلية المستحضرات Natureceuticals
PT 505C Pharmaceutics III	الصيدلية المستحضرات تقنية Pharmaceutical Dosage Form Technology	
PT 606C Sterile Products and Radiopharmaceuticals	الصيدلية التنظيمية الشئون Pharmaceutical Regulatory Affairs	
PT 707C Biopharmaceutics and Pharmacokinetics	التطوير الصيدلى و الأبحاث Pharmaceutical Research and Development	
PT 708C Pharmaceutical Technology I	المتخصصة الصيدلية المستحضرات Specialized Pharmaceuticals	
PT 909C Advanced Drug Delivery Systems	التقنية تخصص في مختارة موضوعات الصيدلية الجودة وضمان Selected Topics in Pharmaceutical Technology and quality assurance	
NP 605C Pharmaceutical Legislations and Practice ethics		
PT E10C Cosmetic Preparations and Cosmeceuticals		
PT E11C Pharmaceutical Regulatory Affairs		
PT E12C Applied Pharmaceutical Technology		
PT E13C Quality assurance and good manufacturing practice		

PT 101C Pharmacy Orientation (1+0)

This is a course to acquaint the beginning pharmacy student with the multiple aspects of the profession of pharmacy, including the mission of pharmacy, role of pharmacist in society, pharmacy careers, classification of medications, interpretation of prescriptions and medication orders, general dispensing procedure and factors affecting drug dosage, sources of drugs, different dosage forms and various routes of administration. In addition to the history of pharmacy practice in various civilizations

PT 202C Physical Pharmacy (2+1)

This course provides students with knowledge of physical and chemical principles essential for the design and formulation of pharmaceutical products. Applications to the fundamental concepts of states of matter, phase equilibrium, buffers and colligative properties. Isotonicity, solubility, dissolution, partition coefficient, surface and interfacial phenomena, surface active agents, adsorption and its application in pharmacy and rheological behaviour of dosage forms are also covered.

PT 303C Pharmaceutics I (2+1)

This course is a study of the system of weights, measures, mathematical expertise and pharmaceutical calculations requisite to the compounding and dispensing of drugs in pharmacy practice. It is also concerned with all formulations aspects, of liquid dosage forms including solutions (aqueous and non-aqueous), suspensions, emulsions and colloids with emphasis on the their design and development. The incompatibilities occurring during dispensing are also considered.

PT 404C Pharmaceutics II (2+1)

This course covers the basic principles of drug diffusion through the skin after topical application. Factors affecting percutaneous absorption, enhancement of skin penetration as well as transdermal drug delivery systems (TDDS) are also presented in this course. It also describes the principles and techniques involved in the formulation and manufacturing of traditional dermatological semisolid dosage forms (creams, ointments, gels and pastes) and cosmetic products. Suppositories and aerosol preparations are covered in this course.

PT 505C Pharmaceutics III (2+1)

The course introduces the students to the kinetics of drug decomposition including rate and order of the reaction, determination of the half-life, expiry date and shelf-life by different methods, stability testing, and in-vitro possible drug/excipients interactions. It also describes the principles and techniques involved in the formulation of solid dosage forms including powders, granules, tablets, capsules and oral modified release dosage forms.

PT 606C Sterile Products and Radiopharmaceuticals (2+1)

This course is a continuation of the study of pharmaceutical dosage forms with emphasis on sterile products (parenterals, ocular formulations, vaccines and blood products). The proper utilization of an admixture program and total parenteral nutrition (TPN) techniques as well as parenteral drug compatibility issues are also considered. The basic principles of nuclear Pharmacy, including the production and applications of radiopharmaceuticals, permissible radiation dose level, radiation hazards/prevention and specifications of radio-active laboratories are discussed.

PT 707C Biopharmaceutics and Pharmacokinetics (2+1)

This course aims to provide students with an understanding of the relation between the physicochemical properties of the drug and its fate in the body including drug absorption, distribution, metabolism and excretion. The course explores the principles of biopharmaceutics and strategies for enhancing drug delivery and bioavailability while covering the concepts of bioequivalence, biowaivers and *in vitro-in vivo* correlations (IVIVC's). Students will also be introduced to the principles of basics pharmacokinetics including IV bolus, extravascular drug administration, multiple dose administration, compartmental models and linear/non-linear

pharmacokinetics.

PT 708C Pharmaceutical Technology (2+1)

The course provides students with an introduction to industrial pharmacy. It deals with the principles of various unit operations such as heat transfer, evaporation, drying, distillation, filtration, centrifugation, crystallization, extraction, size reduction, size separation, size analysis and size enlargement. It focuses on the application of these unit operations in pharmaceutical industry with emphasis on the equipment and machines used during the production of different dosage forms.

PT 909C Advanced Drug Delivery Systems (2+0)

The course aims to provide students with insights and competencies related to the principles of pharmaceutical pre-formulation as a gateway to dosage forms design and formulation. Emphasis is placed on developing delivery systems based on the physical and chemical properties of the drug substance and the intended use of the drug product. The course also introduces the students to the design and development of novel and targeted systems for the delivery of small and macromolecular bioactives. It also covers the application of polymers and excipients to solve problems/issues concerning the optimization of absorption, selective transport, and targeting.

Elective Courses

PT E10C Cosmetic preparations and cosmeceuticals (1+1)

This course aims at providing students information about formulation, manufacturing and analysis of various cosmetic and cosmeceutical preparations. Focus will be placed on suitable ingredients and their properties, laboratory procedures and testing methods. Composition of products and the ways they interact with the skin will be covered in this course.

PT E11C Pharmaceutical Regulatory Affairs (2+0)

This course will provide a basic comprehensive overview of regulatory requirements and considerations for opening new pharmacies, medical stores, factories and scientific offices. Insight into regulations surrounding medicinal and specialized pharmaceutical products registration, pharmacies and medicine stores management will also be given. The course will involve also information on all major regulatory authorities such as the US FDA, EMA,... *etc.* Focus will also be given to key requirements for developing generics, clinical trial applications, and new product marketing applications.

PT E12C Applied Pharmaceutical Technology (2+0)

This course is designed to expand the students knowledge about the various operations implied in pharmaceutical industry. Applications of such knowledge for the large scale production of conventional dosage forms as well as advanced controlled and targeted drug delivery systems will also be covered. The course will also include pilot plant and scale up techniques, container/closure systems, advances in packaging techniques for various pharmaceutical dosage forms, in addition to the stability & regulatory aspects of packaging. The vision about designing a quality product and its manufacturing process to consistently deliver the intended performance of the product to meet patient needs is discussed by applying Quality-by-Design principles.

PT E13C Quality assurance and good manufacturing practice (2+0)

This course focuses on the concept of Quality Assurance/Quality Control, planning and contribution of the Quality Assurance team in an organization. It also involves the principles of the Current Good Manufacturing Practices (cGMP). Through this course, the students are exposed to all aspects of validation, inspection and requirements for manufacturing facilities. It also provides students with a review of the process engineering, technology transfer, personnel management, training and hygiene, premises and contamination control, documentation and auditing, process deviation with emphasis on risk management, complaint handling and product recall theory. The students will also be provided with in-depth knowledge on the organization and operation of the major departments of pharmaceutical companies, as well as ways of dealing with regulatory and compliance issues.