Table (7)

Semester (7)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut.	Total		Period.	Pract./Tut.	Wr.	Oral		
Pharmacology III علم الأدوية-٣	PO 705	2	-	2	Pharmacology-II	15	--	75	10	100	2
Medicinal Chemistry III كيمياء طبية-٣	PC 703	2	1	3	Medicinal Chemistry I	20	40	75	15	150	2
Applied & Forensic Pharmacognosy عقاقير تطبيقي وشرعي	PG 706	1	1	2	Pharmacognosy II	15	25	50	10	100	1
Drug Information معلومات دوائية	PP 701	2	-	2	Pharmacology II	15	-	75	10	100	1
Clinical Biochemistry كيمياء حيوية إكلينيكية	PB 704	2	1	3	Biochemistry-II	20	40	75	15	150	2
Industrial Pharmacy I صيدلة صناعية-١	PI 701	2	1	3	Pharmaceutics IV	20	40	75	15	150	2
Pharmaceutical Legislations and ethics تشريعات صيدلية وأخلاقيات	NP 705	1	-	1	Registration	10	--	40	--	50	1
Elective	PE---	1	1	2	Registration	15	25	50	10	100	1
Total		12	6	18						900	

- Lect. = Lecture
- Period. = Periodical
- Pract./ Tut. = Practical / Tutorial
- Wr. = Written

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Table (8)

Semester (8)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut.	Total		Period.	Pract./Tut.	Wr.	Oral		
Clinical Pharmacokinetics حركية دواء إكلينيكية	PP 802	2	1	3	Biopharmaceutics and Pharmacokinetics	20	40	75	15	150	2
Drug Design تصميم الأدوية	PC 804	1	1	2	Pharmaceutical Organic Chemistry III	15	25	50	10	100	1
Toxicology & Forensic Chemistry سموم وكيمياء شرعية	PO 806	2	1	3	Pharmacology-III	20	40	75	15	150	2
Marketing & Pharmacoeconomics التسويق وإقتصاديات الدواء	NP 806	2	--	2	Registration	25	---	75	--	100	2
Industrial Pharmacy II صيدلة صناعية-٢	PI 802	2	1	3	Industrial Pharmacy I	20	40	75	15	150	2
Community Pharmacy صيدلة مجتمعية	PP 803	2	1	3	Pharmacology II	20	40	75	15	150	2
Elective	PE ---	1	1	2	Registration	15	25	50	10	100	1
Total		12	6	18						900	

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Course Content المحتوى العلمى للمقررات الدراسية

Semester (7)

PO 705 Pharmacology-III

This course integrates principles of pharmacology with conceptual knowledge of pathophysiology disease processes regarding drugs acting on endocrine system. Chemotherapeutic drugs including antimicrobials and anticancer. Immunosuppressant's. anti-inflammatory, analgesics as well as gout and rheumatoid treatments are within the scope of the course. Recent information on stem cell therapy and nanopharmacology are also included.

PC 703 Medicinal Chemistry III

The course handles overview of the medicinal chemistry of NSAIDs, opioids, steroidal hormones, peptide hormones , GIT drugs, antihistaminics and other related drugs. It is designed to afford a comprehensive understanding of the structural features; mechanism of action and SAR of the nominated drug classes. The structural modification to attenuate and enhance the activity of the studied drug classes will be discussed.

PG 706 Applied & Forensic Pharmacognosy

The course aims to provide pharmacy students with sufficient knowledge concerning quality control from herbal aspects, Sampling, structural, physical and analytical standards, purity, safety and adulteration of drugs and their detection. It also covers the modern chromatographic techniques employed for the evaluation of natural product and their products.It also provide the student with basic knowledge about the application of plant biotechnology for the production of pharmaceutically active materials. The course also include an overview on forensic pharmacognosy including plants and their natural products that constitute health hazards, or intended for criminal uses to produce, abortion, loss of mental control, hallucination, heart arrest.. Also it includes the study of drug dependents, narcotics, analgesics psych energetics, euphoric. Mycotoxin as a serious threat to general health and safety of community, contamination of food material with poisonous fungi.

PP 701 Drug Information

This course introduces the student to the concept and need of drug information, types of drug information resources (primary, secondary and tertiary literature), computerized and online drug information, literature evaluation and critical appraisal, retrieval of information. Drug information centers (function, structure, service, and documentation), systematic approach to answering queries, and communicating the response. Ethical and legal issues in providing drug information, evidence-based medicinerecommendations to support medication-use practices.

PB 704 Clinical Biochemistry

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This course will focus on the biochemistry of body fluids and how to use samples of them in Bio Lab. It will present the biochemical changes of body fluids occurring in human body to evaluate the functional state of liver, kidney, heart, bone, gastrointestinal tract, endocrine glands and to give interpretation of the results in relation to health and disease. In addition to clinical enzymology and acid- base balance, homeostasis and biochemical aspects of hematology and blood analysis , urine analysis, tumor markers and recent diagnostic biomarkers, will be covered.

PI 701 Industrial Pharmacy I

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 and extraction. 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.

NP 705 Pharmaceutical Legislations and Ethics

A detailed presentation of law that governs and affects the practice of pharmacy, legal principles for non-controlled and controlled prescriptions, OTC drug requirements, opening new pharmacies, opening medical stores, opening factories, opening scientific offices, medicine registration, pharmacies and medicine stores management. Pharmacist duties and responsibilities, pharmacistpatient relationship, patient's rights and ethical principles and moral rules. Professional ethics provides general principles and history of pharmacy ethics, general principles of medical ethics, conflicts of interests and its management pharmacists relationship with society and family, ethics in disaster, medication error, research ethics and animal ethics.

Semester (8)

PP 802 Clinical Pharmacokinetics

This course provides basic principles of pharmacokinetics and their application to the clinical setting. Single Intravenous bolus and oral kinetics, IV infusion, multiple IV bolus, short infusion &oral dosing, non-linear pharmacokinetics, pharmacokinetic models. Sources of variability in pharmacokinetics, dosage regimen and dosage adjustment in children, obese, elderly patients and chronic disease states.Therapeutic drug monitoring and pharmacogenomics approaches.

PC 804 Drug Design

The course deals with studying the physicochemical aspects of drugs in relation to biological action, pharmacodynamics, pharmacokinetic ADME and the biotransformation of drugs. The prime objective of the course is to include the concept of drug design including lead generation, optimization, prodrugs. The basic concepts of CADD: docking pharmacophore and QSAR. The course will emphasize a combination of fundamentals and

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applications of drug design and development. The course involves the molecular aspects of drug action (chemical, physical, and biological) and the general metabolic pathways as basic knowledge for understanding some approaches of drug design. Overall, the course is designed to meet the needs Pharmacy students seeking profession in health sciences, and will offer unique opportunities to correlate structure of biomolecules to medicinal chemistry and drug design

PO 806 Toxicology & Forensic Chemistry

This course provides basics concepts of toxicology including the mechanism of toxicity, target organ toxicity and its treatment. General principles of poison management will be discussed. Toxic groups including heavy metals, toxic gases, natural poisons, and pesticides are covered. Environmental, occupational, reproductive and genetic toxicology as well as drug abuse are included. Postmortem sampling for detection of poisons, methods of detection, interpretation of results and writing of a report are also covered.

NP 806 Marketing & Pharmacoeconomics

Pharmacoeconomics: the basic concepts of health economics, learning basic terms of health economics and understand key principles. Topics cover the economic mechanisms of health care markets as market failures, and government intervention. The course covers the key components of health care financing, and some methods of how to contain health care expenditure. Alongside the major definitions in health technology assessment, students should have an overview about different types of economic evaluation, budget impact analysis and their uses. Moreover, students should get familiar with different methods of pricing among which value-based pricing.

Marketing: The objective of this course is to introduce students to the concepts, analyses, and activities that *comprise* marketing management, and to provide practice in assessing and solving marketing problems. The course is also a foundation for advanced electives in Marketing as well as other business/social disciplines. Topics include marketing strategy, customer behavior, segmentation, market research, product management, pricing, promotion, sales force management and competitive analysis.

PI 802 Industrial Pharmacy II

This course is a continuation of the study of the various unit operations in pharmaceutical industry with emphasis on size reduction, size separation, size analysis and size enlargement involved in the process development, scale-up and manufacturing of pharmaceutical drug products in industry (conventional / advanced nanotechnology based). In addition to the container/closure systems, some of the packaging processing methods are covered. Moreover, 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.

PP 803 Community Pharmacy

The course provides students with competencies and knowledge for the provision of quality pharmaceutical care in a community pharmacy setting aiming at improving use of medicines and therapeutic outcomes. The course covers

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differentiation between minor and major ailments and responding to minor ailments with over-the-counter products. It also provides concepts of patient assessment, counseling, and monitoring in community pharmacy and in outpatient care settings and introduces students to pharmaceutical care services for chronic-diseased outpatients and to psychosocial aspects in patient care. In addition, the course provides the students with competencies to promote the public health role of pharmacist including health promotion and disease prevention activities

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