

Table (9)

Semester (9)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut.	Total		Period.	Pract./Tut.	Wr.	Oral		
Pharmaceutical Biotechnology تقنية حيوية صيدلية	PM 904	2	1	3	General Microbiology & Immunology	20	40	75	15	150	2
Clinical Pharmacy I صيدلة إكلينيكية-١	PP 904	2	1	3	Pharmacology II	20	40	75	15	150	2
Hospital Pharmacy صيدلة مستشفيات	PP 905	2	1	3	Pharmaceutics IV	20	40	75	15	150	2
Public Health صحة عامة	MD 906	2	-	2	Medical Microbiology	10	--	75	10	100	2
Phytotherapy and Aromatherapy التداوي بالأعشاب و العلاج العطري	PG 907	2	1	3	Phytochemistry-II	20	40	75	15	150	2
Good Manufacturing Practice ممارسة صناعية جيدة	PI 903	1	1	2	Pharmaceutical Technology II	15	25	50	10	100	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

(ت داخلي: ١٣٤٠)، (ت : ٢٤١١٣٤٠)

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Table (10)

Semester (10)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut.	Total		Period.	Pract./Tut.	Wr.	Oral		
Quality Control of Pharmaceuticals مراقبة الجودة للمستحضرات الصيدلانية	PA 005	2	1	3	Pharmaceutical Analytical Chemistry-II	20	40	75	15	150	2
First Aid and Basic Life Support الإسعافات الأولية والدعم الأساسي للحياة	MD 007	1	1	2	Registration	15	25	50	10	100	1
Drug interactions تفاعلات الأدوية	PO 007	1	1	2	Pharmacology-III	15	25	50	10	100	1
Advanced Drug Delivery Systems أنظمة توصيل الدواء المتقدمة	PT 008	1	1	2	Pharmaceutics IV	15	25	50	10	100	1
Clinical Pharmacy II صيدلة إكلينيكية-٢	PP 006	2	1	3	Clinical Pharmacy I	20	40	75	15	150	2
Clinical Research, Pharmacoepidemiology and Pharmacovigilance البحوث الإكلينيكية وعلم الوبائيات الدوائية واليقظة الدوائية	PP 007	2	--	2	Registration	15	--	75	10	100	1
Entrepreneurship ريادة الأعمال	NP 007	1	-	1	Registration	10	-	40	--	50	1
Elective	PE ---	1	1	2	Registration	15	25	50	10	100	1
Total		11	6	17						850	

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

(ت داخلي: ١٣٤٠)، (ت : ٢٤١١٣٤٠)

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Course Content

المحتوى العلمى للمقررات الدراسية

Semester (9)

PM 904 Pharmaceutical Biotechnology

The course aims to provide students with fundamentals, scope and applications in biotechnology through studying fermentation technology, upstream, downstream, scaling up and down processes, use of molecular techniques for production of recombinant products and other major biotechnological products, biotransformation, bioremediation, bioleaching, bioinsecticides, biosurfactants and biopolymer production. The course will provide specialist in-depth training and hands-on experience of the growing range of new analytical techniques used in the Biotechnology sector and also the computational skills used to maximise the information gained from these methods. The use of advanced spectroscopic techniques such as Circular Dichroism (CD) and protein NMR, High-Performance Liquid Chromatography (HPLC) and Capillary Electrophoresis (CE) to study biomolecules and address concerns such as product quality, purity, contaminant detection, and batch consistency will be covered.

PP 904 Clinical Pharmacy I

Definition and concepts of clinical pharmacy and pharmaceutical care, and qualification to become a clinical pharmacy. Patient history, medication reconciliation, therapeutic planning and drug-related problems. Interpretation of clinical laboratory data and physical examination. Providing Medication Therapy management services. Principles of special care populations (geriatric, pediatric, renal and hepatic patients, obesity & pregnancy & lactation). The course also introduces the student to the principles of management and supportive care of oncological diseases, blood disorders and nutritional deficiencies.

PP 905 Hospital Pharmacy

The course aims to introduce students to hospital pharmacy organization, structure, management and related activities on both technical and administrative levels in accordance with national and international established guidelines. Administrative services include: the pharmacy, the pharmacy and therapeutic committee and policy making, the hospital formulary, medication purchasing, distribution and dispensing systems. The pharmaceutical (technical) services include: preparation of Intravenous (IV) admixtures, total parenteral nutrition (TPN) fluids, renal dialysis fluids, dispensing and safe handling of radiopharmaceuticals, cytotoxic drugs, and medical gases.

MD 906 Public Health

This course aims at understanding all scientific disciplines required for health education and promotion directed to the community health. How epidemiology acts as the bases of public health actions will be taught. Detailed

scientific information and practices programs will be provided for control of communicable, non-communicable diseases, improving mental, social, environmental, occupational, geriatric and family health, use of sufficient and balanced food and nutrition, supplying safe drinking water, treating and disposing wastes and proper intervention during disasters

PG 907 Phytotherapy and Aromatherapy

Upon successful completion of this course, the students should be able to know guidelines for prescribing herbal medicinal drugs on the basis of the pharmacological properties of these drugs including therapeutic uses, mechanism of action, dosage, adverse reactions, contraindications & drug interactions. The course also allows students understand pharmacotherapeutic principles applied to the treatment of different diseases, pharmacovigilance and rational use of drugs. Also the student should understand the basis of complementary and alternative medicine with emphasis on herbal remedies, nutritional supplements, homeopathies, aromatherapy & their effect on maintaining optimum health and prevention of chronic diseases. It includes studying of medicinal plants portfolios in relation to Phytopharmaceuticals in Egyptian Market.

PI 903 Good Manufacturing Practice

This course involves the principles of the Current Good Manufacturing Practices (cGMP). It exposes students to all aspects of validation, calibration, inspection and the 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.

Semester (10)

PA 005 Quality Control of Pharmaceuticals

The course concerned with methods and procedures for evaluation of safety, potency and palatability of pharmaceutical products of small and large molecules drugs including herbal drugs. The standard pharmacopeial methods, procedures and international guidelines as WHO, EMA, TGA. Good Analytical Practice and Sampling. Documentation. Validation of analytical methods according to ICH Guidelines Q2 R1. Compendial testing. Drug stability testing according to ICH Q1 R2 Guidelines. Stress conditions for drug degradation according to ICH Q1 R2 Guidelines. Drug expiration, Drug withdrawal from the market. Pharmaceutical regulations according to FDA & EMA (European medicine agency) and ISO and BSI. Drug-exipient interactions and adduct formation; analytical techniques used to detect drug-exipient compatibility.

MD 007 First Aid and Basic Life Support

Basic life support, bleeding, shock, medical emergencies, poisoning, bones and joints, soft tissue injuries, rescue and transportation

PO 007 Drug Interactions

The course is designed to familiarize students with the major types of drug interactions (Pharmacokinetic, pharmacodynamic and pharmacogenetic interactions) in the clinical setting, in addition to drug food and drug disease interactions. The course compromises digitalis drug interactions, anticoagulants, hypoglycemic interactions, antineoplastic drug interactions, antihypertensive interactions and anticonvulsant Interactions. Students will be expected to determine whether a given interaction is clinically significant or required pharmacist intervention, make rational, scientifically recommendations for management of drug interactions.

PT 008 Advanced Drug Delivery Systems

This course covers nanoformulations, advanced drug delivery systems for transdermal and oral delivery, site-specific, stimuli-responsive drug delivery systems and targeted drug delivery systems.

PP 006 Clinical Pharmacy II

The course introduces the student to the principles of pharmacotherapeutics & management of the common disease states (e.g. cardiovascular diseases, gastrointestinal diseases, respiratory diseases, endocrine diseases, obstetrics and gynecology, rheumatic diseases, renal diseases, CNS diseases).

PP 007 Clinical research, Pharmacoepidemiology and Pharmacovigilance

This course introduces the student to the basic principles of clinical research, design of research studies, types of research studies, clinical trials, statistical presentation of research data and ethical guidelines in drug research. This course addresses a range of study designs and analytic techniques for observational studies on the utilization, safety, and effectiveness of pharmaceuticals. Students will develop an understanding of how to plan, implement, analyse, and criticize pharmacoepidemiological studies. This course also provides the student's with understanding of pharmacovigilance importance, concept, processes, systems, global safety standards and regulations and reporting systems

NP 007 Entrepreneurship

This course is designed to enhance a student's knowledge in leadership, business, and financial skills in pharmacy practice while learning the traits of an entrepreneur, current topics in entrepreneurship with a specific focus on pharmacy practice and patient care programs. This course will teach the participants a comprehensive set of critical skills needed to develop a profitable business project. This course is designed to provide the students the personal and business tools including risk-taking, strategic planning, marketing, competitiveness, and social responsibility to make the transition from the academic environment to the daily practice of pharmacy now and in the future, with

an emphasis on entrepreneurship. This course outlines the process of designing, launching and running a new business, which is often initially a 18. The people who create these businesses are called entrepreneurs.