

Elective Courses

المقررات الاختيارية وتدرس بالفصول (٨، ٩، ١٠)

Course Code	Course Title	Credit Hours		
		L	P/L	Total
PA E06	Advanced Pharmaceutical Analysis – Spectroscopy التحليل الصيدلي المتقدم – التحليل الطيفي	1	1	2
PA E07	Environmental Analysis التحليل البيئي	1	1	2
PA E08	Forensic Analysis تحليل الطب الشرعي	1	1	2
PB E 05	Cancer Biology بيولوجيا السرطان	1	1	2
PB E06	Radioisotopes in biochemistry and medicine النظائر المشعة في الكيمياء الحيوية والطب	1	1	2
PB E07	Clinical nutrition التغذية الإكلينيكية	1	1	2
PB E08	Tissue metabolism التمثيل الغذائي للأنسجة	1	1	2
PC E05	Computer-aided Molecular Design التصميم الجزيئي بمساعدة الحاسوب	1	1	2
PC E06	Medicinal chemistry of supplementary drugs and Nutraceuticals الكيمياء الطبية للأدوية التكميلية والمغذيات	1	1	2
PC E07	Nanochemistry and related aspects كيمياء النانو والجوانب ذات الصلة	1	1	2
PG E08	Biotechnology of Medicinal Plants التقنية الحيوية للنباتات الطبية	1	1	2
PG E09	Complementary and Alternative Medicinal Plants النباتات الطبية التكميلية والبديلة	1	1	2
PG E10	Quality Control of Herbal Drug ضبط الجودة للأدوية العشبية	1	1	2
PI E04	Drug Manufacturing التصنيع الدوائي	1	1	2
PM E05	Antimicrobial stewardship الإشراف على مضادات الميكروبات	1	1	2
PM E06	Infection Control مكافحة العدوى	1	1	2
PM E07	Molecular Biology and Epigenetics علم الأحياء الجزيئي وعلم التخليق	1	1	2
PO E08	Biological Standardization معايرة بيولوجية	1	1	2
PP E08	Precision Pharmacy التدقيق الصيدلي	1	1	2

PP E09	Advanced Pharmaceutical Care	الرعاية الصيدلانية المتقدمة	1	1	2
PP E10	Pharmacy Administration and Management	إدارة الأعمال الصيدلانية والإدارة	1	1	2
PR E05	Recent Techniques of Structure Elucidation	التقنيات الحديثة لإستنتاج التركيب البنائي	1	1	2
PR E06	Green Chemistry	الكيمياء الخضراء	1	1	2
PR E07	Advanced Level of Drug Synthesis	مستوى متقدم في تركيب الأدوية	1	1	2
PT E09	Drug Targeting	استهداف الدواء	1	1	2
PT E10	Pharmaceutical Nanotechnology	تقنية النانو الصيدلانية	1	1	2
PT E11	Cosmetic Preparation	مستحضرات التجميل	1	1	2
PT E12	Clinical Pharmaceutics	الصيدلانيات الإكلينيكية	1	1	2

Course Content

المحتوى العلمى للمقررات الدراسية

PA E06 Advanced Analytical Chemistry – Spectroscopy

In this course the pharmaceutical applications of different analytical spectroscopic techniques including UV, Visible spectrometry, Fluorimetry, IR, NMR and MS in the quality control laboratories will be studied. A brief introduction about the instrumentation of these analytical spectroscopic techniques will be presented as well.

PA E07 Environmental Analysis

In this context, analysis of different environmental samples such as water, sewage, air, dust particles will be covered. Different analytical techniques which are closely associated with the environmental analysis will be discussed in details.

PA E08 Forensic analysis

Herein, an introduction about different forensic samples including criminal and overdose samples and ecstasy tablets will be presented. Importantly, different methods of the analysis of these samples will be covered including portable approaches.

PB E05 Cancer Biology

This course will cover the different types of carcinogenic agents and how these carcinogenic agents can affect DNA, the mechanism of chemical carcinogenesis, molecular basis of cancer, the mechanisms of activations of proto-oncogenes and their roles in carcinogenesis, the regulators of cell cycle and how the actions of P53 protein and pRb as negative regulators of cell cycle and suppressors of cancer with emphasis of the effects of P53 in stimulating DNA repair and apoptosis. In addition, the tumor markers and their role in diagnosis and evaluation of progression and treatment of cancer will be studied. Biochemical basis of current anticancer treatments will be clarified.

PB E06 Radioisotopes in biochemistry and medicine

This course will cover the types of isotopes, radioactive decay, half life, measurement and their units. Radioisotope techniques in biochemistry. Research, diagnostic and treatment applications of isotopes will be studied. Biological effects of radiation will be clarified.

PB E07 Clinical Nutrition

The aim of the course is designed to provide the student with understanding of the fundamentals of nutrition, roles of carbohydrates, proteins, fats, water, minerals and vitamins in clinical nutrition and how these components promote and maintain of optimal health. Nutritional assessment and management of patients requiring specialized nutrition support, enteral nutrition, and parental nutrition. Nutritional therapy in specific diseases (cardiovascular, cancer, gastrointestinal diseases, malnutrition and genetic diseases) is covered.

PB E08 Tissue metabolism

This course will cover the biochemistry of erythrocytes, the blood plasma protein- coagulation and fibrinolysis, role of liver in metabolism, the metabolism of muscle at rest and during exercise, the metabolism of the nervous system and the extracellular matrix and connective tissue

PC E05 Computer-Aided molecular Design

This course affords advanced aspects of the drug design and discovery. Specifically, it will handle molecular modelling, protein data bank, Pharmacophore building & alignment. QSAR; rational drug design, and combinatorial chemistry.

PC E06 Medicinal chemistry of supplementary drugs and Nutraceuticals

The increasingly emerge of several substances as supplementary drugs and nutraceuticals necessitates that pharmacists should understand the basic knowledge underlying the therapeutic aspects of the mentioned substances. This elective course will afford pharmacy students with the medicinal chemistry aspects of supplementary drugs; nutraceuticals; Vitamins; Antiaging, and antiobesity agents.

PC E07 Nanochemistry and related aspects

This course focused on the chemical aspects underlying nano- and radiotherapy as main aspects. Related topics involving chemical delivery systems; biotechnology drugs; and Diagnostic agents will be also discussed. The course contents should reflect the basic knowledge concerning the design, analytical and synthetic aspects involved in the development of these new drugs classes.

PG E08 Biotechnology of Medicinal Plants

This course will focus on biotechnological approaches for the production of promising natural products (secondary metabolites) including cell culture, engineered microbial hosts for heterologous expression of plant natural product genes and pathways, and transgenic medicinal plants research (approaches, importance, and application).

PG E09 Complementary and Alternative Medicinal Therapies

The study of herbal preparations, nutritional supplements, and homeopathies. The study of herbal preparations that are widely used by the general public as self-selected OTC (over-the-counter) products/NPDs (nonprescription drugs). Food items for therapeutic, disease prevention, or health promotion purposes. Emphasis will be placed on the role of the pharmacist to help clients make an informed choice and counsel them on the selection of useful and safe products.

PG E10 Quality Control of Herbal Drugs

Quality control of herbal drugs includes: Introduction, history of quality control, Factors affecting production of herbal medicine, Quality evaluation of herbal medicine (structural standards analytical standards, physical and biological evaluation), Insuring herbal product quality by determination of common pollutants as pesticide residue heavy metals, radioactive contamination etc.

PI E04 Drug Manufacturing

The course provides students with the basic understanding in the area of preformulation study, manufacturing of capsules, fundamentals and importance of liposomes, nanoparticles, sterile area, target drug delivery systems, stability, and good laboratory practice.

PM E05 Antimicrobial stewardship

This course provides basic concepts of the emergence and spread of resistance of microorganisms to different antimicrobial drug classes. The specific goal of this course is to provide cutting-edge approaches for detection of resistance and antimicrobial discovery. In addition, chemical optimization, and usage that minimizes the development of resistance will be examined.

PM E06 Infection Control

This course aims to ensure that students are well prepared to direct the infection control services, to develop and to supervise infection programs in different health care facilities. Also, this course will provide students with knowledge about basic guidelines of infection control, outbreak investigations, surveillance techniques as well as prevention of health care-associated infections. This course will help students to work within the hospital team and in the integrated programs of quality management.

PM E07 Molecular Biology and Epigenetic

The course aims to provide students with fundamental of molecular biology techniques. It also discusses the molecular mechanisms for regulating gene expression and new techniques used to modulate gene expression. The class will discuss the mechanisms of epigenetic regulation including DNA methylation and posttranslational modification of histones and the roles of chromatin assembly modifying complexes, noncoding RNAs and nuclear organization.

PO E08 Biological Standardization

This course covers the biological and biochemical evaluation of various drugs that lead identification of the mode of action, safety and hazards of newly developed drugs compared with already available drugs. The first part will cover a brief introduction on biological assay and drug discovering system. The second part is concerned with most recent available analytical techniques used routinely in drugs evaluation in both experimental and clinical labs. The third part covers screening methods and new technologies used for pharmacological evaluation of novel compounds acting on autonomic nervous system, CVS and CNS, endocrine, GIT and respiratory systems.

PP E08 Precision Pharmacy

This course covers all aspects of precision medicine, the basic understanding of genetic disease, molecular diagnostic methods and principles for personalized medicine. The course also investigates the mechanisms for

interindividual variability in drug response, ethical, legal and regulatory and issues of pharmacogenetics and best practices to ensure the effectiveness of genomic medicine.

PP E09 Advanced Pharmaceutical Care

The course provides the student with the foundations of pharmaceutical care, principles and skills necessary for patient care process. This course allows students to apply didactic knowledge to direct patient care activities, patient specific pharmacotherapy, evidence based medicine, and effective communication with patients and healthcare professionals

PP E10 Pharmacy Administration and Management

This course deals with the basic concepts and skills in pharmacy administration and management needed for pharmacy students to work in a variety of fields. Managerial issues that pharmacists face including strategies, finance, accounting, systems, and levels of management. The course familiarizes the students with people working within pharmaceutical organizations, modern pharmacy practice and customer behavior

PR E05 Recent techniques of structure elucidation

This course focuses on the identification and structure determination of organic molecules by modern spectroscopic techniques. Problem solving and interpretation of 2D-NMR and mass spectrometry spectra will be emphasized.

PR E06 Green Chemistry

This course focuses on the application of innovative technology to established industrial processes, environmentally improved routes to important products, design of new green chemicals and materials, sustainable resources, biotechnology alternatives, evaluation of environmental impact. Students will understand how to assess the environmental impact of chemical operations and understand the methods for their minimization and be able to suggest alternative green methods to current processes.

PR E07 Advanced Levels of Drug Synthesis

This course presents an integrated and insightful look at successful drug synthesis in the drug discovery market. The course includes an introduction on how chemical synthesis, the art and science of constructing molecules shapes our world. Also, This course includes examples of practical methods to make drugs currently in use or in clinical phases.

PT E09 Drug Targeting

This course introduces the different technologies that can be employed to enhance the drug accumulation at their target sites. It emphasizes the biological limitations and barriers to drug transport across the membranes, the importance of new excipients and new drug formulations, the possibilities of drug targeting by modern formulation techniques, and how to improve bioavailability of drugs produced by biotechnology.

PT E10 Pharmaceutical Nanotechnology

This course provides an overview of the the field of nanotechnology. It will give an insight into the major advantages of nanotechnology over conventional treatment and approaches for treating various diseases. It focuses on concepts, types, formulation, characterization of nanopharmaceuticals, and their applications in medicine (e.g., for imaging, diagnosis and drug delivery).

PT E11 Cosmetic Preparations

This course provides broad-based knowledge about cosmetic products and their types, classification, ingredients, formulation, uses, quality control and packaging.

PT E12 Clinical Pharmaceutics

This course considers the role of basic pharmaceutics in determining or modifying clinical outcomes. It deals with the behavior of medicines within the body and how adverse drug reactions can result from nature of formulation, dosage forms and devices as well as excipients rather than from the drug. It focuses on dealing with formulation/excipient-related problems, tailoring of formulations for specific populations, and how this affects the treatment outcome. The course depends mainly on examples and case studies.