

Course Description – Pharmacy Program

Research Project for Pharmacy 700502

The students will register for this course in the summer semester of the fourth year. The work on the project will continue until the second semester of the fifth year. The student has to present his work in front of a committee to evaluate the assigned project.

Anatomy for Pharmacy 7101204

This course covers general anatomy (terminology, body organization, and body tissues). This is in addition to skeletal, muscular, cardiovascular, nervous, gastrointestinal, urinary, and genital systems.

Physiology for Pharmacy I – 7102205

This course provides students with basic aspects of medical physiology. It begins with fundamental concepts of homeostasis and cellular physiology, exploring how cells maintain internal equilibrium and communicate through various signaling pathways. The course progresses to explore the integrated functions of major physiological systems, including the nervous, muscular, cardiovascular, respiratory, and sensory systems

Physiology for Pharmacy II – 7102206

This course is designed to provide the students with basic aspects of medical physiology, including renal physiology and body fluids, gastrointestinal physiology, endocrine system, and reproductive physiology. On the other hand, it discusses the pathophysiological aspects of the body systems taught in this course

Pathology 7103119

This course covers the principles of the discipline of pathology. Disease is presented by organ system. The method of instruction includes lectures, demonstrations, group discussions, laboratories, and autopsy participation

Pharmaceutical Immunity 7103906

This course concentrates on the basic and clinical science of the immune system and its relationship to other sciences and biological systems of mammals. This course

will concentrate on the function-structure relationship of the immune system and its components such as the lymphoid tissue and cells, the development and function of the immune system, as well as the clinical science of the immune system and its role in the prevention, causation, and diagnosis of human diseases such as cancer, autoimmune disease, and other topics.

General Biology for Pharmacy 7104110

This foundational course in cellular biology provides pharmacy students with a comprehensive understanding of fundamental biological principles crucial for their professional careers. It explores the unity and diversity of life, delving into the unique properties of living organisms and the intricate chemistry within cells. Students will investigate cellular organization, including the structure and function of organelles and the vital role of the plasma membrane. Key topics include cell division, emphasizing its significance in growth, development, and disease, as well as the molecular aspects of DNA, crucial for understanding gene expression, genetic disorders, and the development of novel therapeutics.

Principles of Biochemistry and Metabolic Biochemistry 7104210

This is an introduction to the study of biological compounds, carbohydrates, proteins, and fats, in the human body, and their metabolic reactivity; the way the body gets energy. It also introduces, briefly, major aspects of enzymology, types of restraining enzymatic reactivity, and enzyme structures and co-enzymes. The course has one credit hour lab.

Clinical Biochemistry 7104220

The course includes a case-study approach to present the fundamentals of biochemistry and molecular biology in the context of human disease. Cases will be carefully selected to cover common diseases and important principles. These cases will be supplemented by clinical descriptions of each disease and a comprehensive discussion of the underlying pathophysiological mechanisms and associated enzymatic and chemical alterations in tissues and body fluids.

Pharmaceutical Microbiology 7105405

This course covers the basic information on microorganisms, their basic structure and mode of growth. Medical, pharmaceutical, and environmental importance of some microorganisms. Anti-microbial chemotherapy: mode of action and prudent use. Moreover, this course is designed to introduce students to the concept and

methodologies of sterilization, disinfection, antisepsis and preservation, and how microorganisms spoil pharmaceutical products.

Public Health and Pharmacoepidemiology 7106204

This course provides a comprehensive introduction to Public Health, including its definition, functions, strategies, and approaches, with an emphasis on its role in health promotion and disease prevention. It also introduces the fundamental concepts of Epidemiology, focusing on methods used to describe diseases in populations (descriptive epidemiology), as well as analytical epidemiological study designs, including bias, confounding, and measures of risk used to investigate disease etiology.

The course aims to equip pharmacy students with essential knowledge and skills to understand disease patterns, critically evaluate scientific evidence, and contribute to disease prevention and health promotion. This supports their professional role within healthcare systems and enhances their ability to apply epidemiological principles in pharmaceutical and clinical practice.

Pharmacology for Pharmacy 1 – 7109306

This course aims to provide students with the fundamental concepts of pharmacology, with emphasis on drug classification, pharmacodynamics, and pharmacokinetics. It addresses the mechanisms by which drugs interact with biological systems, including receptor theory, dose–response relationships, and the processes of drug absorption, distribution, metabolism, and excretion. The course also introduces students to the pharmacology of the autonomic and somatic nervous systems, including cholinergic and adrenergic agents, neuromuscular junction blockers, and muscle relaxants. In addition, it covers drugs acting on the cardiovascular and hematologic systems, such as antihypertensive agents, antiarrhythmics, antianginal drugs, diuretics, anticoagulants, and lipid-lowering agents, with emphasis on their therapeutic uses, adverse effects, and clinical significance.

Pharmacology for Pharmacy II – 7109307

This course aims to familiarize students with the pharmacology of the central nervous system, with emphasis on the major drug classes used in the treatment of neurological and psychiatric disorders, such as psychosis, depression, anxiety, insomnia, epilepsy, pain, neurodegenerative diseases, and anesthesia. It also

addresses the mechanisms of action, therapeutic uses, and clinical precautions of these drugs. In addition, the course includes the study of drugs used in the management of gastrointestinal disorders, bone diseases, rheumatologic and immune disorders, gout, headache, urinary system disorders, anemia, and dermatological diseases, with emphasis on their therapeutic uses, adverse effects, and clinical significance.

Pharmacology for Pharmacy III – 7109308

This course aims to familiarize students with the pharmacologic management of a wide range of disease conditions, including endocrine disorders, respiratory diseases, infectious diseases, and cancer. It covers drugs acting on the hypothalamus and pituitary gland, sex hormones, adrenal corticosteroids, thyroid drugs, and antidiabetic agents, in addition to the pharmacologic treatment of respiratory diseases such as asthma and chronic obstructive pulmonary disease. The course also includes the study of anti-infective agents, including antibiotics, antivirals, antifungals, antiparasitic drugs, and anticancer chemotherapy, with emphasis on the rational use of drugs, antimicrobial resistance, and the importance of applying pharmacological knowledge in clinical decision-making.

Clinical Nutrition and Nutraceuticals – 7301211

This course offers a comprehensive overview of normal and therapeutic nutrition, emphasizing the role of nutrition in promoting and restoring wellness. It covers the nutritional care of individuals experiencing health issues due to single or multiple conditions, with special attention to prevalent nutritional problems in the Arab world. Additionally, the course explores nutritional education strategies for individuals, families, and communities. An in-depth focus is also given to food supplements—including vitamins, minerals, herbs, and other essential nutrients—covering their definitions, classifications, and specific roles in human nutrition and health.

Pharmaceutical Care I – 7301403

This course introduces the students to medical terminology, abbreviations, communication with patients, drug data collection in the clinical environment. students will be given drug profiles and virtual prescriptions and will be trained on how to interpret and analyze the profile from all aspects.

Clinical Pharmacy I – 7301406

This course covers the concepts of clinical and therapeutic effects and the role of pharmacist using clinical care modules on the following: cardiovascular system and endocrinological disorders.

Clinical Toxicology Cases 7301408

This course includes the basic and clinical principles of toxicology. Absorption and mechanism of intoxication by all types of toxicants are studied. Poison management and proper clinical measures for treatment of poisoning are included. Analytical and clinical investigation of poisoning is also discussed.

Clinical Pharmacy II -7301503

This course is an in-depth clinical study of significant drug categories used in treatment at the primary care level. Emphasis is placed on adverse effects and drug-drug interactions and the task of selecting an appropriate medication for specific patients.

Drug Information 7301504

This course examines medical prescriptions, their types and how to deal with them; common drug-drug interactions, drug resources, and bibliography. The course also studies modern medications & their mechanism of work. Students also learn about retrieval and dissemination of drug information and common drug interactions

Communication Skills 7302301

The course emphasizes the most important communication skills to enable the student to play a vital role in patient education and thus improving patient understanding and compliance.

Pharmacy Law and Legalization 7302501

This course is a study of laws and regulations related to all aspects of the profession of pharmacy, namely legal and ethical principles. Emphasis is placed on the evaluation of non-prescription medications and appliances.

Community Pharmacy Clerkship 7302505

In this course, the student will spend 16 weeks (two summer sessions) of continuous practical training: 8 weeks in a community & 8 weeks in the hospital pharmacy during the regular working hours (8 hours a day). The student will be supervised by the pharmacist running the pharmacy and a faculty member. The student is will go

through structured training where he/she has to cover different aspects of pharmacy organization and prescription handling, as well as some administrative and financial affairs related to pharmacy practice. The major part of the practical training will require the student to know all the important classes of medications used in the treatment of various diseases. This will also involve the knowledge of trade names, manufacturers, suppliers, and distributors of such medications and other related medical products. The student will not be allowed to register for other classes during the practical training session.

Over-the-Counter Medications 7302507

Introducing the students to medications that can be dispensed to patients without a prescription. These drugs include antacids, anthelmintics, antidiarrhea, laxative products, emetic and anti-emetic drugs; hemorrhoid products; cold, cough and allergy products; asthma products; analgesics and nsaid; vitamins and minerals; infant formula products; weight control products; menstrual products, dental products, insect sting and bite products; burns and sunburn products, skin products, infant products, foot care products. This will be in addition to answering questions raised by patients seeking self-treatment concerning symptoms, aspects of patient counseling in the safe and effective use of products dispensed to him/her, and side effects of this class of drugs

Medicinal Chemistry I – 7303110

The aim of this course is to introduce the basic concepts of medicinal chemistry. Study the physicochemical properties of the drugs and their distribution, metabolism, and excretion. The course will discuss specific drug classes by covering their chemistry, mechanism of action, and its structural activity relationship (SAR) of antibacterial agents, anti-protzoal, antifungal drugs, and antiviral agents.

Medicinal Chemistry II – 7303111

At the beginning of the course, a drug design and development subject will be covered, then a study of certain classes of drugs and their mechanism of action and their structure-activity relationship will be followed. Drug classes to be studied include anti-cancer drugs, cholinergic and adrenergic systems, diuretics, cardiovascular drugs (antihypertensive drugs, Antianginal Drugs, Anticoagulants, Antihyperlipidimic Agents), opioids, and antihistamines.

Medicinal Chemistry III – 7303112

The course covers the relation of the chemical structure and the biological activities of various pharmacological classes. The drugs that act on the central nervous system (CNS). The insulin chemistry will be discussed, and the structure-activity relationship of the hypoglycemic agents. Moreover, the structure-activity relationship (SAR) of the non-steroidal and steroidal anti-inflammatory drugs, as well as molecular docking

Phytochemistry 7303304

This course focuses on the classification of phytogenic compounds, also studying primary and secondary metabolic products, including heteroglycans, complex polysaccharides, glycosides, tannins, lipids, volatile oils, terpenoids, and alkaloids, their physicochemical properties, the methods of their separation, and their therapeutic and non-therapeutic indications.

Pharmacognosy 7303306

This course provides pharmacy students with basic knowledge about medicinal plants, mainly in Palestine, in terms of their types, ways of collection and storage, scientific names, parts used, evidence-based therapeutic uses, other uses, active constituents, mode of action, side effects, contraindications, herb-drug interactions, and their medications in the Palestinian pharmaceutical market.

Pharmacognosy Lab. 7303307

This course is an application of theoretical knowledge in the lab. Practical lab sessions will be conducted, which involve microscopic, macroscopic, and chemical tests used in the identification of crude drugs.

Quality Control for Pharmacy 7303505

The aim of the course is to introduce students to the concept of pharmaceutical quality, inter-relationships of quality assurance, quality control, good pharmaceutical manufacturing practices, and the pharmaceutical quality standards. This course will help students to understand the criteria used for validation of analytical methods and the factors affecting the chemical stability of medicines. This course also presents an overview and practical understanding of quality control testing performed in the pharmaceutical industry and quality control laboratories

Pharmaceutical Marketing and Drug Promotion 7303901

This course equips pharmacy students with essential knowledge of pharmaceutical marketing principles, drug promotion strategies, and regulatory compliance in the healthcare sector. Students will examine key concepts including market segmentation, product branding, pricing strategies, and distribution channels for both prescription and OTC medications. The curriculum emphasizes ethical and legal frameworks governing drug promotion, such as FDA regulations and WHO ethical guidelines, while addressing contemporary issues like direct-to-consumer advertising, digital marketing, and the role of pharmacists in promoting rational drug use. Through case studies and practical exercises, students will learn to critically evaluate marketing campaigns, understand the economic factors influencing drug accessibility, and develop skills to communicate evidence-based drug information effectively. The course prepares future pharmacists to navigate the intersection of healthcare, business, and ethics in pharmaceutical marketing.

Pharmaco-Economics and Rational Use of Drugs 7303902

This course introduces students to the basic concepts of Pharmacoeconomics. It allows students to gain practical experience in the development of economic evaluation of pharmaceuticals. The topics covered include assessment of effectiveness data, costs, quality of life assessment, and the development of economic models of cost-effectiveness. In addition, rational use of medication and the appropriate drug use according to the clinical need with the lowest cost to patients and community are also studied.

Innovation and Artificial Intelligence in Pharmacy 7303903

This course equips pharmacy students with the knowledge and skills to apply computer applications and artificial intelligence (AI) in pharmaceutical sciences and healthcare. It covers the use of computational tools for drug design, molecular modeling, and data analysis in pharmaceutical research. Students will learn about AI-driven technologies for pharmacogenomics, clinical decision support, and personalized medicine, as well as machine learning applications for predicting drug interactions, optimizing dosages, and improving therapeutic outcomes. The course also explores the use of AI in pharmaceutical supply chain management, automation, and quality control. Ethical considerations, data privacy, and regulatory compliance in healthcare AI applications are emphasized. By the end of the course, students will be prepared to integrate advanced technological tools into modern pharmacy practice and research.

Research Methods in Pharmacy 7303906

This course aims to introduce students to scientific research methodology in the field of Pharmacy Sciences, helping them develop their abilities in understanding research and its procedures. Students will learn concepts, foundations, and methods in research before choosing a problem for their research project, in which they gather data and use statistical analysis methods to solve the problem in the Pharmacy Sciences field. Thus, this course will provide an overview of principles of research methodology, particularly in the Pharmacy Sciences field.

Clinical Pharmacokinetics 7303911

This course aims to bridge the gap between theoretical pharmacokinetic (PK) principles and clinical applications, focusing on the individualization and optimization of drug therapy. Students will explore how disease states, age-related physiological changes, and inter-patient variability necessitate tailored dosing regimens to ensure therapeutic efficacy and minimize toxicity. A core component of the curriculum is the mastery of Therapeutic Drug Monitoring (TDM). We move beyond the mere measurement of plasma concentrations to the high-level interpretation of data. Through rigorous case studies and clinical simulations, students will learn to determine when to monitor, how to interpret results within a pharmacodynamic context, and how to communicate precise dosage adjustments to the healthcare team

Physical Pharmacy I – 7304201

A compulsory course with three lectures per week describing the physical and chemical foundations of materials and their applications in the pharmaceutical sciences. The course covers several topics, including gaseous, liquid, and solid states of matter; the properties of each type of these states; the properties of supercritical fluids, the forces of linking compounds and phase equilibrium; the laws of thermodynamics, their interpretations, and their applications in the field of pharmaceutical sciences. The course also deals with liquids, their types, properties, solubility, ionic balance, buffer solutions, and the phenomenon of distribution. In addition, the laws of the speed of chemical reactions and their relationship to determining the expiration date of drugs and studying the stability of pharmaceutical preparations are recognized

Physical Pharmacy II – 7304203

This course introduces more advanced topics related to the physicochemical principles of drug systems. The course covers surface and interfacial phenomena,

surfactant systems, rheology, drug diffusion, membrane permeability, drug dissolution, and pharmaceutical preformulating. Students will explore how these physical properties affect drug behavior, formulation, stability, and bioavailability. Emphasis is placed on applying these principles in the design and development of pharmaceutical dosage forms. The course aims to provide students with a deep understanding of the interactions between drug molecules and their environment, enabling them to optimize drug delivery systems and improve therapeutic outcomes.

Physical Pharmacy Lab 7304204

A laboratory compulsory course aimed at developing practical laboratory skills of students through the application of practical experiences. This course is a practical application of the theoretical concepts that are discussed in the course of Physical Pharmacy 1. The course includes several experiments such as preparation of buffer solutions, drug stability and validity date estimation by analyzing the stability acceleration, determining the distribution coefficient, the theories of absorption, dissolution and solubility, phase equilibrium and diffusion, thermodynamics, and other related experiments

Pharmaceutics I – 7304301

This course aims to introduce students to the essential principles that are needed in the manufacture of pharmaceutical dosage forms. These principles include routes of administration and properties of the active substance that may affect the design of the dosage form. In particular, some pharmaceutical products will be studied in depth, namely, pharmaceutical solutions, suspensions and emulsions, and transdermal drug delivery. It also covers other pharmaceutical dosage forms such as gels, gums, lotions and moisturizers, as well as how to improve the absorption of the medication through the skin.

Pharmaceutics II – 7304302

This course is an important continuation of Pharmaceutics I. During this course, the students will be exposed to the theoretical basis for the manufacture of suppositories, powders, granules, tablets and capsules. This course also aims at introducing students to the important principles of the design and manufacturing of sterile pharmaceutical dosage forms such as injectable ophthalmic products.

Pharmaceutics Lab 7304303

The lab provides an introduction to the principles of compounding and dispensing of medicinal products on a small laboratory scale. Students learn to perform calculations, compounding techniques, and packaging and labeling of pharmaceutical preparations. Typical products prepared in the lab include liquid dosage forms (solutions, suspensions, and emulsions), semisolids (ointments, creams, gels, and pastes), suppositories, powders, and capsule filling. The lab provides an introduction to the principles of compounding and dispensing of medicinal products on a small laboratory scale. Students learn to perform calculations, compounding techniques, and packaging and labeling of pharmaceutical preparations. Typical products prepared in the lab include liquid dosage forms (solutions, suspensions and emulsions), semisolids (ointments, creams, gels and pastes), suppositories, powders, and capsule filling.

Cosmetics 7304304

Students in this course get acquainted with the basics of cosmetics preparation. They also study required specifications for cosmetic materials, the mechanisms of their effectiveness and influence. Students will get training on how to prepare some of these cosmetic materials according to standard specifications.

Cosmetics Lab 7304305

This course aims to deliver the basic principles of cosmetics, including concepts of preparing, quality testing, and uses of different cosmetic products belonging to major classes. The course emphasizes the formulation and functional bases for understanding the actions of different active ingredients and their delivery approaches. the following sessions of pharmaceutical practice include the very basic principles of pharmaceutical dosage forms and the compounding of medicinal products on a small laboratory scale.

Industrial Pharmacy 7304401

This course aims at introducing students to the world of the pharmaceutical industry; principles and basis of good manufacturing in addition to unit operations preparation techniques that affect the manufacturing of various pharmaceutical dosage forms. Students also learn about pre-formulation tests, stability protocols, quality control, and GMP regulations to be followed in pharmaceutical plants in order to produce products with satisfactory, if not good, quality and deliver these products in the required form and manner.

Industrial Pharmacy Lab 7304402

This is a laboratory course, and it aims at introducing students to the world of the pharmaceutical industry in all its aspects. Students will work in an environment similar to that in a pharmaceutical plant, particularly in the research and development department. Experiments on different topics are designed to study many factors involved in the processing of products throughout their lifetime until production stages by using small-scale equipment available in the lab. In the experiments, students will conduct mixing, milling, granulation, tableting, capsule filling, and quality control tests, etc.

Pharmacokinetics 7304501

The course provides an introduction to the study of mathematical and physiological principles of drug absorption, distribution, metabolism and excretion. Topics covered include an introduction to pharmacokinetic models, demonstration of the prediction of drug concentration after different routes of administration, discussion of the physicochemical and patient-related factors affecting drug absorption, bioavailability and bioequivalence, multiple dosing kinetics and multi-compartment models.

Pharmaceutical Calculations 7304504

This course will discuss the most important aspects of pharmaceutical calculations required to perform better pharmaceutical services. These calculations include dose adjustment, dilution & concentration, isotonic solution, electrolyte solution, rate of flow of i.v solutions, and mathematical conversions

Statistics for Pharmacy 10216238

A theoretical compulsory course aims to provide students with basic knowledge in statistics needed in the field of pharmaceuticals. These skills include reading, analysis, interpretation, and application of research findings. It includes descriptive statistics, sampling methods, statistical inference, analysis of clinical and drug trials, including bioequivalence, validation of results, examination of the dissolution of drug forms, standardization of weight and components of drug forms, etc. This course also deals with issues related to some statistical tests to compare the results of two or more groups, such as the T-test, Wilcoxon test, ANOVA, and Tukey test. The focus is also on the methods used in the study of epidemiology and discussing the design of the experiment during the development of pharmaceuticals

General Chemistry for Health Sciences 10231114

This course is designed to provide students of health sciences with the basics of chemistry. The course covers topics in chemical structure, bonding, naming of inorganic compounds, balancing chemical equations, reactions in aqueous solutions, thermochemistry, atomic structure, various types of solutions, chemical thermodynamics, chemical equilibrium, acids and bases.

General Chemistry for Health Sciences Lab 10231115

This course is designed to let students understand laboratory ethics and policies, and to provide students with tangible practical skills linked to their theoretical knowledge in chemistry fundamentals. The aims of this course are to familiarize students with laboratory techniques and tools (i.e., Bunsen burner, electric balance, calorimeter, volumetric glassware), simple chemical synthesis, and other chemical principles and techniques (e.g., filtration, titration) that will serve them in more advanced experimental work at the undergraduate and graduate level.

Analytical Chemistry for Pharmacy 10231217

A theoretical compulsory course of three lectures per week that includes an introduction to the science of pharmaceutical analysis and focuses on methods of quantitative pharmacological analysis using different standard methods approved by international pharmacopoeias, such as titration methods of all kinds. The course also introduces the student to several technologies used in pharmaceutical analysis and will provide students with the scientific rules necessary to judge the accuracy and correctness of data and readings resulting from pharmaceutical analysis, in addition to discussing the correct methods used in the quantitative calculations of the active substance or impurities in medicines

Analytical Chemistry Lab for Pharmacy 10231218

A laboratory compulsory course that includes a set of experiments. It is designed for the practical application of the principles and theories covered in the theoretical pharmaceutical analysis course. where the student performs a number of experiments in which several standard methods are used in the analysis of drugs, and the student in this course will be practically trained on how to judge the accuracy and validity of the readings resulting from practical experiments. Many of the methods of analysis that will be applied in this laboratory are methods approved by international pharmacopoeias.

Pharmaceutical Organic Chemistry I – 10231251

This compulsory theoretical course provides pharmacy students with a foundational understanding of organic chemistry tailored to pharmaceutical applications. It adopts a functional group approach, covering the structure, nomenclature, classification, physical properties, synthesis, and reactivity of organic compounds essential for drug development. Key topics include chemical bonding, acidity and basicity, isomerism, stereochemistry, and IUPAC naming principles relevant to pharmaceutical compounds. The course explores aliphatic and cyclic hydrocarbons, unsaturated hydrocarbons, halogenated compounds, and steroidal structures, emphasizing their roles in drug design and activity. Students will also learn basic synthetic techniques, focusing on substitution and elimination reactions, their mechanisms, and their applications in the synthesis and chemical manufacturing of drugs. This course prepares students for advanced pharmaceutical organic chemistry, equipping them with the knowledge and skills needed for drug discovery, development, and production.

Pharmaceutical Organic Chemistry II – 10231252

This course, delivered through three weekly lectures, builds upon the foundational knowledge gained in Pharmaceutical Organic Chemistry I. It provides pharmacy students with a deeper understanding of organic chemistry, focusing on alcohols, synthesis, reactions, and naming, as well as ethers, amines, carbonyls, and aromatic compounds and their critical applications in drug synthesis, preparation, and nomenclature. Students will also explore the use of spectroscopic techniques. Additionally, the course introduces advanced concepts in molecular reactivity, functional group transformations, and synthetic pathway design. By the end of this course, students will be well-prepared for Medicinal Chemistry I, where they will study drug structures, formulations, and development in greater detail.

Pharmaceutical Organic Chemistry Laboratory 10231255

This compulsory laboratory course equips pharmacy students with essential practical skills and methodologies in pharmaceutical organic chemistry. It introduces safety rules and best practices for handling chemicals and laboratory equipment. Students will gain hands-on experience with techniques for identifying, purifying, and separating organic compounds by understanding the physical and chemical properties of functional groups. The course is divided into two parts: the first focuses on physical tests for identifying active pharmaceutical ingredients, while the second emphasizes the synthesis of bioactive compounds, drugs, and adjuvants. Students will also develop problem-solving skills, learn to analyze experimental data, and

write scientific reports, preparing them for advanced applications in pharmaceutical research and development.

Pharmaceutical instrumental analysis 10231317

This course is considered complementary to the analytical chemistry course for health sciences, as it deals with a full explanation of the instruments and devices used in the quantitative and qualitative analysis of the active substance and impurities present in pharmaceutical preparations. Emphasis is also placed on the methods adopted by the international pharmacopoeia in pharmaceutical analysis to link the course to the pharmaceutical industrial labor market

Practical pharmaceutical instrumental analysis – 10231318

A compulsory course involves three practical hours of laboratory per week. It covers basic instrumental methods used in quantitative chemical analysis, such as: polarimetry, refractometry, pH titrations, potentiometry, conductometry, electrogravimetry, coulometry, and spectrometry

Remedial General Biology 7001001

This course is intended to provide an opportunity to investigate an area of biology and an integral part of everyday life biology plays. We will investigate the composition, diversity, and how living things are connected on Earth. Fundamental concepts of heredity and evolution will lead to investigations into explorations of the living world, the physical environment, and the interactions that occur in and between ecosystems. Students engage in investigations to learn and explain the behavior of living things in a diversity of scenarios that combine scientific reasoning, analysis, communication skills, and real-world applications. This course is a freshman-level course at Najah University, and prior knowledge of physical science is a plus. Students completing general biology may move on to basic chemistry, environmental science, or human anatomy & physiology.

Mathematics for Health Sciences 7004006

This course is designed for students of health sciences so that they can master skills of basic math, use of measurement systems, and strategies of problem solving needed in health-science courses. Fractional equations and formulas; ratios, proportions, and inverse variations; percents; the metric system of measurement; apothecaries' and household systems of measurement; calculations needed to

determine dosages; construction and reading of graphs; introduction to statistics, including measures of central tendency and measures of dispersion.

Principles of Accounting 7004007

The goal of this course is to acquaint students with the basic principles and concepts which represent the framework of accounting. The course will specifically discuss the meaning of 'accounting,' its historical development, its importance in making economic decisions, and its basic theories on which financial principles and procedures and final financial operations are based. All this is for the purpose of serving the management of the company and for other parties involved in making economic decisions related to the company. This is based on the assumption of the accuracy and the validity of financial operations during the year.

Human Genetics 7104203

This course provides students with a comprehensive view of the science of genetics. it covers the history and development of genetics, structure and function of genes, chromosomes and their anomalies, patterns of single gene inheritance, types and mechanisms of mutations and tools of human molecular genetics.

General Microbiology Lab. 7105404

This course is intended to teach the students of medical specializations the most important practical skills and methodologies used in the microbiology lab. The course includes several practical sessions that start with an introductory lab, which introduces the students to the main concepts of the biosafety levels, safety rules, the most important equipment and instruments used in the microbiology lab, and the theoretical basics of light and electron microscopy. Each of the other practical sessions includes a comprehensive explanation of the theoretical basics of the experiment(s) assigned to be conducted during the session, the practical steps of the experiment(s), and analysis as well as interpretation of the obtained results. The practical skills and procedures of these sessions include types and preparation of bacterial artificial culture media, staining procedures used to identify and characterize bacteria and some of their structural components, the main methods used in bacterial enumeration, sterilization and disinfection, some of the main bacterial diagnostic tests, and antibiotic sensitivity tests.

Environmental Toxicology 7106402

This course focuses mainly on the effects produced by poisons on the environment (humans, animals, plants, soil, water, etc.). It includes a detailed study of the groups of environmental pollutants, the need for further research and investigation in this area, bioaccumulation, the effect of poisons on all levels of the universe, and the methods and pathways leading to contamination and the methods of calculating or estimating them

Forensic Science 7227402

Students will develop general technological and lab abilities, and skills in the analysis and interpretation of data. Specifically, a variety of abilities which will enable students to take on the full variety of tasks satisfied by a forensic researcher such as dna profiling, illegal material research, recognition of human remains and the use of it and data source in the recognition, tracking and avoidance of criminal activity.

Alternative Medicine 7232301

This course aims to teach the students the principles and applications of alternative and complementary medicine, such as herbal medicine, physical therapy and acupuncture. It focuses on understanding the pharmacological basis, therapeutic uses, and evidence-based evaluation of alternative therapies and the pharmacist's role in guiding the safe and effective use of these therapies. Practical teaching in this course was made by presentations about these types of alternative medicine.

Clinical Use of Antibiotics 7301407

This course is designed to explore the wide scope of clinical problems related to infectious diseases and management with emphasis on the most common conditions.

Drugs in Pregnancy & Lactation 7301506

This course is designed to introduce the pharmacy student to the usage of drugs during pregnancy and lactation and their possible risks to the fetus and the newborn. It provides a didactic framework for the therapeutic management of a number of common diseases during pregnancy and lactation life stages. Coverage will include the physiological and the pharmacokinetic changes during these two life stages.

Patient Education and Counseling 7302302

This course explores the basic principles and concepts of medication education and counseling to patients in community or inpatient settings. Introduces the student to

principles of communication skills in pharmacy practice with patients and health care providers.

Pharmaceutical Marketing and Drug Promotion 7302503

This course introduces students to the basic concepts of Pharmacoeconomics. It allows students to gain practical experience in the development of economic evaluation of pharmaceuticals. The topics covered include assessment of effectiveness data, costs, quality of life assessment, and the development of economic models of cost-effectiveness. In addition, rational use of medication and appropriate drug use according to clinical need with the lowest cost to patients and the community are also studied.

Veterinary Medical Products 7302504

The elective course is designed to introduce the pharmacy student to veterinary pharmacology and the role pharmacists play in the care of animals. The students will evaluate the most commonly used drugs in veterinary medicine, relate the pharmacology of those drugs in humans to that of animals, and develop a reference document which will be of assistance in their practice.

Phytochemistry (Lab.) 7303305

This course is a practical study of natural chemical groups such as flavonoids, glycosides, volatile oils, alkaloids, and fixed oils; ways of their identification, isolation, and evaluation according to accredited pharmaceutical rules (constitutions).

Drug Metabolism 7303403

The drug metabolism course presents the principles of drug metabolism on a broad-based level. Topics include in-depth discussions of phase I and II biotransformation pathways, pharmacogenetics, biotransformation and toxicity, in vitro/in vivo techniques for evaluating drug metabolism, and scale-up of drug metabolism data. In addition, the course is designed to help students to understand the requirements for drug metabolism during the drug discovery and development processes.

Synthesis of Drugs 7303405

The course is designed for undergraduate students who have passed successfully the Medicinal Chemistry I and II courses and have already completed a basic course in organic chemistry. The course will cover different methods to evaluate the structure

of a target molecule through the retro-synthetic approach of that structure, and the strategies that can proceed for efficiently synthesizing that structure. the course will also cover the variety of tactics that can be employed for achieving the synthetic goal. at the completion of the course each student will demonstrate his/her mastery of these concepts by applying them to a complex and novel structure that has not yet succumbed to laboratory synthesis. every student will randomly be given a different target molecule, with each structure presenting its own unique challenges. the student will derive a strategy for the synthesis of the target molecule and will then outline and justify a plan for its synthesis from readily-available starting materials using all available tactics.

Phytotherapy 7303406

This course focuses on evidence-based phytogenic compounds which have therapeutic or physiological effects on the human body systems (git, CVS, CNS, endocrine system, respiratory system, reproductive system, and others)

Green Pharmacy 7303407

This course aims to enhance the student's knowledge of the latest developments in the use of natural products (which were not covered in pharmacognosy and nutraceuticals) to safely treat individual health problems without side effects, and to provide them with advice on how to prevent different diseases.

Medicinal Chemistry Lab. 7303912

The course focuses on drug synthesis strategy and synthesis methodology, mainly within the pharmaceutical field and on organic-chemical reaction mechanisms. This course will cover new synthetic methods, parallel synthesis, and synthetic strategies followed in drug development and SAR investigation. The laboratory will also include identification of organic compounds by means of different spectroscopic methods (IR, MS and NMR).

Pharmaceutical Nanotechnology 7303914

Pharmaceutical nanotechnology is an emerging frontier in nanotechnology. It integrates materials science, chemical science, physics, and life science toward biological and medical applications. In this course, nanofabrication and the interaction between nanostructured materials and biological system are addressed. Through introducing vital information on the application of nanotechnology, this course presents how to design and develop nano-devices for applications in

pharmaceuticals and healthcare. Typical applications include nanotechnology-based drug delivery systems, nano-based imaging and diagnostic systems, nanotoxicology, tissue engineering, gene therapy, and translating nanomedicines into clinical investigation.

Pharmaceutical Excipients 7304403

Pharmaceutical excipients are an essential part of pharmaceutical technology responsible for providing good quality pharmaceutical formulation. Usually, all pharmaceutical dosage forms contain one or more than one pharmaceutical excipients. Excipients make compounding design easier and perform a wide range of functions in order to obtain the desired properties for the finished dosage form. This course focuses on excipient development and functionality, including their uses, properties, and safety.

Pharmaceutical Sterilization 7304404

Sterilization is an essential part of pharmaceutical technology, which is responsible for providing good quality pharmaceutical formulations intended for parenteral and ophthalmic preparations. Students are acquainted with the most used sterilization conditions in the field of industry. During the course, a visit to a pharmaceutical or hospital is expected.

Pharmacokinetics (lab.) 7304502

This is a workshop and a lab course. It is concerned with the application of pharmacokinetics parameters in addition to the solution of some practical problems and pharmaceutical overlap.

Biotechnology Products 7304505

This course deals with molecular and genetic biochemical technology with emphasis on medical uses of drugs manufactured by biotechnological methods. This course will also deal with diseases treated with gene therapy.

Remedial General Chemistry 10231100

This introductory course is designed for students with little or no background in chemistry. It provides a foundational understanding of key chemical concepts that are essential for further study in science, health, or engineering disciplines. The course emphasizes real-life applications and avoids complex mathematical formulations. Topics include the structure of matter, chemical bonding, states of

matter, the periodic table, basic chemical reactions, and the role of chemistry in everyday life. By the end of the course, students will be equipped with the basic knowledge and confidence needed to approach general chemistry courses and understand the chemical principles behind common phenomena.

Innovation and Entrepreneurship 10631300

This course is designed for students to help them be involved in creative, innovative, entrepreneurial, and corporate ventures in the future. Subjects covered include introduction to entrepreneurship & creativity; developing successful business ideas; managing and growing an entrepreneurial firm; technical and financial feasibility studies; business models; market surveys; and business plan preparation.

Entrepreneurship and Innovation 11011222

Explores the world of entrepreneurship and creativity by examining the processes and techniques used to develop ideas and turn them into successful projects. The course includes understanding the foundations of entrepreneurship and the stages of emerging business development, in addition to analyzing the factors that affect the success of entrepreneurial projects and enhancing creativity in various fields.