

Fatima College of Health Sciences
Department of Pharmacy
Bachelor of Pharmacy-Course Descriptions (Under CAA evaluation)

Year 1

Semester 1

PHA130 - Introduction to Pharmacy

Co-requisite: None

Pre-requisites: None

This introductory course presents you with an overview of the science and practice of pharmacy, the disciplines that comprise the profession and areas of practice, including the history of pharmacy, systems of medicine, medicinal chemistry, development of pharmaceutical dosage forms, pharmaceutical calculations, and the underpinning principles of effective communication. You will be presented with the scope of pharmacy practice enabling you to start choosing your career direction early in the pharmacy curriculum at Fatima College of Health Sciences as well as being introduced to the Latin abbreviations used in prescription writing.

Semester 2

PHA112 - Bioorganic and Medicinal Chemistry

Co-requisite: PHA113

Pre-requisites: GRD141, GRD142

This course introduces chemistry as a central and underpinning science in pharmacy, describing how aspects of organic and inorganic chemistry are essential to an understanding of the structure, properties and mechanisms of action of therapeutic agents. You will investigate the structure, bonding and chemical reactivity of important classes of organic molecules. You will also study the chemistry of inorganic compounds, particularly the complexes of transition metal ions that have important applications in medicine.

PHA113 - Biochemistry, Cellular and Molecular Biology

Co-requisite: PHA112

Pre-requisites: GRD141, GRD142

To introduce pharmacy students to essential elements of biochemistry. In the process, students will develop their abilities to integrate biochemical information as it relates to both desired and unwanted effects of therapeutics and appreciate the underlying foundation of biochemistry in the treatment of individual diseases and pathological conditions.

PHA131 - Pharmacy Health and Society

Co-requisite: None

Pre-requisites: None

This course introduces the foundations in Pharmacy, Health and Society required for underpinning pharmacy practice in later levels of study. Students will learn about culture and how it influences health beliefs. Students will learn further applied mathematical techniques and be introduced to the concepts of pharmacoepidemiology. The UAE healthcare system, local and global pharmacy organizations their contribution to the profession are introduced. Students will

undertake self-directed learning and participate in taught classes to enhance your learning experience.

Semester 3

Year 2

Semester 1

PHA213 - Basis of Drug Action

Co-requisite: None

Pre-requisites: PHA112

This course provides basic knowledge about the molecular structure of drugs and relates molecular structure to pharmacokinetic and pharmacodynamic properties. You will learn about the drug discovery and design process, the methods used to establish the structure of drug molecules and the techniques used to synthesize them. The principles you will learn in this course provide a foundation for the integrated therapeutics courses which focus on the treatment of diseases in specific therapeutic areas.

PHA221 - Principles of Pharmacology

Co-requisite: None

Pre-requisites: PHA130, PHA112, PHA113

This course introduces students to the fundamental principles of pharmacology with a focus on basis of drug action. The consequences of drug binding to cell-surface receptors, proteins and enzymes learned at molecular, cellular and organ level. The course further delves into the principles of the autonomic and peripheral nervous system pharmacology emphasizing on chemical mediators.

PHA232 - Non-Prescription Medication for Self-Care

Co-requisite: None

Pre-requisites: PHA131

This course provides students with a mix of pharmaceutical care knowledge and skills in non-prescription therapeutics of minor ailments encountered in the community pharmacy setting. Student will learn to respond to symptoms and requests for non-prescription medicines pertaining to minor ailments. Student will undertake self-directed learning, submit assigned tasks and participate in learning labs virtual/practical all of which will enhance their learning experience.

PHA233 - Pharmacy Law and Ethics

Co-requisite: None

Pre-requisites: PHA131

This course will introduce you to the regulatory and ethical framework of the practice of pharmacy in the UAE. You will learn about the legal and professional requirements for pharmacists and pharmacies, competency standards and scope of practice, pharmacist licensing and registration, the regulation pharmaceutical establishments and ownership, manufacturing, imports and the distribution of medicinal products including the supply of narcotic drugs and psychotropic substances. You will also learn about the regulation of the use of information and communication in the provision of healthcare services and the regulation of the advertisement and promotion of medical products.

Semester 2

PHA214 - Physicochemical Basis of Pharmacy

Co-requisite: None

Pre-requisites: GRD141

This course aims to provide students with a firm understanding of the basic physicochemical principles that underpin the science behind pharmacy as a discipline. This understanding, reinforced by some mathematical principles, sets the foundation for students to build upon in drug delivery courses available in the second, third and fourth years of the program. The understanding of these principles will also assist students in their understanding in some areas of chemistry, physiology and biology.

PHA215 - Microbiology and Immunology

Co-requisite: None

Pre-requisites: GRD101, PHA221

This course introduces the principles of essential microbiology and immunology, emphasizing the human host interaction with an environment full of microbes and pathogens. The course further details microbes and microbial physiology, diseases caused by these microbes and their control, immune response to disease and preventative strategies, and the immune system's role in vaccination, hypersensitivity, and autoimmune disorders. The course also introduces mechanisms of organ rejection and its prevention.

PHA222 - Drug Delivery & Physical Pharmaceutics

Co-requisite: PHA214

Pre-requisites: None

This course will provide you with a comprehensive background of the physical chemistry that underpins pharmaceutical solutions and the impact of solution properties upon the biopharmaceutical characteristics of the drug. You will learn about the physicochemical properties of pharmaceutical solids (drugs and excipients), transfer into solution and how the properties of those solutions relate to the biopharmaceutical characteristics of the drug. This course provides a foundation for you to build upon in further drug delivery courses where you will learn about more advanced dosage forms. Appreciating these principles will help you in to understand other areas of chemistry, physiology and biology.

Semester 3

PHA151 PHA151 - Community Professional Experience Placement (PEP) A

Co-requisite: None

Pre-requisites: PHA131

This course is the first of nine professional experience placements embedded in the Bachelor of Pharmacy Program and embeds 120 hours of placement experience in the community pharmacy and/or pharmaceutical wholesaler setting. This course provides you with a practical overview of the pharmaceutical supply chain. You will learn about the relationship between pharmaceutical manufacturers, wholesalers, distributors, customers, and regulatory agencies. The focus of this placement is to highlight the practical importance of quantity and quality of supply of medicine and their delivery to the accurate place and customers and at the correct time.

PHA252 - Community PEP B

Co-requisite: None

Pre-requisites: PHA151, PHA232, PHA233

This professional experience placement course embeds 120 hours of experiential learning experience in the community pharmacy setting. This course is designed to enhance your knowledge and understanding of a range of topics relevant to the practice of pharmacy in the community setting, to further develop skills in communication and problem solving and to provide the opportunity for you to apply your knowledge and skills learned from theory courses. The primary focus of this Community PEP B is to provide you with an introduction to the activities of community pharmacy with the focus on the management of minor ailments most commonly seen in community pharmacy setting.

Year 3

Semester 1

PHA334 - Context for Practice I

Co-requisite: None

Pre-requisites: PHA131, PHA232

This course builds on the knowledge and understanding of a range of topics apposite to the practice of pharmacy introduced in PHA131 and PHA232.

You will be introduced to the principles of pharmaceutical care, pharmacy management, pharmacovigilance and harm reduction. You will learn about the principles of medication safety and managing poisoning and overdose. You will also learn to apply a systematic approach to patient-centered pharmaceutical care, including patient assessment, problem-solving and communication.

PHA323 - Drug Delivery and Disposition

Co-requisite: None

Pre-requisites: PHA222, PHA214

This course builds upon the fundamental concepts of drug formulation and development introduced in PHA214 and PHA222. The context of drug delivery is expanded with an emphasis on oral drug absorption and pharmacokinetics. You will apply numerical techniques to optimize formulations and study the absorption of drugs into the body and the removal of drugs from the body. You will relate the processing of drugs and excipients and the formulation of medicines to therapeutic efficacy. You will also learn about non-linear pharmacokinetics and its relationship to clinical toxicology.

PHA341 - Integrated Therapeutics: Pain, Inflammation & Rheumatology

Co-requisite: None

Pre-requisites: PHA113

This course provides a foundation in the pathology, diagnosis and management of wide array of autoimmune, inflammatory and degenerative diseases that affect diverse organ systems, together with the management of pain arising from a variety of sources. You will learn about the diagnosis and management of immune diseases including rheumatoid arthritis, osteoarthritis and gout, and apply your knowledge of the immune system, chemistry and pharmacology to the treatment of disease.

Semester 2

PHA343 - Integrated Therapeutics: Cardiology & Pulmonology

Co-requisite: PHA342

Pre-requisites: PHA341

This course will provide you with an understanding of the etiology, pathophysiology, pharmacotherapy and management of cardiovascular and pulmonary diseases. You will develop your skills in patient assessment and monitoring in these therapeutic areas and develop and effectively communicate a care plan. You will apply your knowledge of chemistry, pharmacology and pharmaceuticals to the diagnosis and management of cardiovascular and pulmonary diseases, including geriatric patients and special populations. You will develop of critical thinking applied to clinical information and employ your oral and written communication skills to convey your understanding and advice to patients and healthcare professionals.

PHA342 - Integrated Therapeutics: Endocrinology and Nephrology

Co-requisite: PHA343

Pre-requisites: PHA341

This course will provide you with an understanding of the etiology, pathophysiology, pharmacotherapy and management of endocrine conditions and renal disease, including socioeconomic considerations. You will develop your skills in patient assessment and monitoring in these therapeutic areas and develop and effectively communicate a care plan. You will apply your knowledge of chemistry, pharmacology and pharmaceuticals to the diagnosis and management of hypothalamic-pituitary-adrenal (HPA) axis, thyroid and parathyroid disorders, adrenocortical dysfunction, diabetes and acute, chronic and drug-induced renal disease. You will develop of critical thinking applied to clinical information and employ your oral and written communication skills to convey your understanding and advice to patients and healthcare professionals.

PHA335 - Pharmacy in Public Health Context

Co-requisite: None

Pre-requisites: PHA334

This course puts the practice of pharmacy and delivery of pharmacy services in a public health context. You will learn about how public health policy is designed, implemented and analyzed and about the impact upon the health of both the individual patient that of the whole population. You will learn how pharmacists and other health professionals contribute to public health policy and develop an understanding of the economic implications. You will apply your knowledge to integrated solutions to clinical problems and further develop your skills in performing clinical calculations and dispensing.

PHA324 - Drug Delivery, Disposition and Dynamics

Co-requisite: None

Pre-requisites: PHA323

This course expands upon the pharmacokinetic principles introduced in PHA323. You will learn about the key concepts of clinical pharmacokinetics, drug metabolism and disposition, and how these are applied to therapeutic drug monitoring (TDM). You will learn how pharmacokinetic considerations impact upon the clinical care of patients and the effects of disease states, other conditions and medicines. You will build upon your knowledge of surface properties and learn about the formulation of heterogeneous systems, including dispersions, semi-solids, suppositories, pessaries, aerosols and modified release products.

Semester 3

PHA353 - Hospital 1 PEP A (3CH) and PHA354 - Hospital 1 PEP B (3CH)

Co-requisite: None

Pre-requisites: PHA342, PHA343

This course is the third of nine professional experience placements embedded in the Bachelor of Pharmacy Program. This course is paired with PHA354 and embeds 120 hours of placement experience in the hospital pharmacy setting. Together with PHA354, the primary focus of this course is to introduce you to the core activities of the practice of hospital pharmacy; providing you with the foundation needed to effectively engage in more advanced clinical experience placements later in the Program. The course focuses on a number of key services provided by hospital pharmacists and hospital pharmacy departments: The practice of providing unit-based pharmacy services, drug information services, hospital drug formulary services, management of a hospital pharmacy department, outpatient dispensing, distribution services and specialized

sterile and cytotoxic dispensing are introduced. You will develop practice skills in a range of settings by applying the knowledge and understanding you have learned from theoretical courses. The emphasis of all activities is on process, rather than focusing on the management of individual diseases or specific situations.

Year 4

Semester 1

PHA444 - Integrated Therapeutics: GI Disease & Parenteral Nutrition

Co-requisite: None

Pre-requisites: PHA342, PHA343

This course provides a foundation of basic knowledge required for the diagnosis and management of different patient groups with gastrointestinal diseases (GI). This course will relate the pathophysiology of these disorders with the rational design, pharmaceuticals, and clinical use of drugs in an integrated fashion. The course also offers an overview of the fundamental principles of parenteral nutrition; indications for use, composition, administration, monitoring and complications.

PHA445 - Integrated Therapeutics: Dermatology & Infectious Disease

Co-requisite: None

Pre-requisites: PHA342, PHA343

The course involves the pathophysiology and pharmacotherapy of infectious diseases and dermatological conditions in various patient groups with emphasis on integrated learning that draws together the chemical and biological basis of disease, drug discovery of medicinal agents, pharmaceutical formulations and therapy. Drug therapy principles for conditions and patient groups will be emphasized enabling students to acquire the skills necessary to provide clinical pharmacy services within these areas.

PHA425 - Pharmaceutical Stability and Sterile Formulations

Co-requisite: None

Pre-requisites: PHA324

This course builds upon your fundamental knowledge of physicochemical principles and chemistry and your applied knowledge of pharmaceuticals to develop an applied understanding of pharmaceutical preformulation, formulation and the sterilization and packaging of parenteral products. You will learn to apply a fundamental understanding of drugs and excipients from preformulation studies to the rational design medicines and to apply your knowledge of degradation mechanisms and kinetics to calculate the shelf lives of medicines. You will learn about aseptic processing, disinfection and preservation.

PHA436 - Context for Practice II

Co-requisite: None

Pre-requisites: PHA334, PHA335

The course will provide students with knowledge about different aspects of hospital pharmacy and the role of pharmacists in aged-care facilities. The course will focus on medication management reviews, drug information, clinical pharmacy methods, and optimization of drug treatment for the individual patient. The aim of this course is to provide the foundation necessary for students to enter a hospital practice environment and have a clear understanding of the different departments and roles a pharmacist may participate in patient-centered pharmaceutical care.

Semester 2

PHA447 - Integrated Therapeutics: Neurology and Psychiatry

Co-requisite: None

Pre-requisites: PHA444, PHA445

This course provides the basic knowledge required for the management of patients with a range of common mental health and neurology disorders. The pharmacology and clinical aspects of medications associated with each area are presented in detail in an integrated fashion. Drug therapy principles for particular conditions and patient groups will be emphasized, enabling students to acquire the skills necessary to provide clinical pharmacy services within these areas. Students will perform a number of tasks, which will foster the development of critical thinking and oral and written communication skills.

PHA446 - Integrative Toxicology

Co-requisite: None

Pre-requisites: PHA323

This course builds on the concepts and drugs of clinical toxicology introduced in PHA323 Drug Delivery and Disposition. The course will focus on the biochemical, molecular, and physiological mechanisms of toxicology and the resulting responses, both functional and pathological, to this insult in some organ systems. Also, regulation of body systems and use of drugs in Pharmacy practice to overcome toxicity will be covered. Students will be given the opportunity to explore toxicology topics that have received recent attention in scientific or societal arenas.

PHA426 - Advanced Drug Delivery and Development

Co-requisite: None

Pre-requisites: PHA324, PHA425

This course will provide students with a detailed understanding of the specific biopharmaceutical and formulation considerations for non-oral drug delivery routes, including transdermal, pulmonary, nasal, buccal, rectal, vaginal, ocular, intramuscular and subcutaneous. The course will also address advanced oral drug delivery technologies and targeted drug delivery systems. The drug development process for novel therapeutic agents and generic drugs will be explained. The importance of good manufacturing practices and quality assurance in the pharmaceutical industry will also be taught.

PHA461 - Pharmacy Research Critical Review

Co-requisite: None

Pre-requisites: PHA 425, PHA 436, and PHA 445

This course builds on student understanding and experience of the literature review process, focusing on several components, including 'Searching for Pharmacy related literature', 'Evaluating literature' and 'Writing up a review'. These will occur within the context of a Pharmaceutical science or practice or clinical research topic. This course will help students to delve scientifically into the current literature base to provide a critical overview of a chosen research topic to identify gaps and problems and then provide solutions to those problems. The preparation of the review article is teamwork involving 3 or 4 students in a chosen research topic.

Semester 3

**PHA455 - AHS PEP A Professional Experience Placement (PEP) (3CH)
And PHA456- AHS PEP B Professional Experience Placement (PEP) (3CH)**

Co-requisite: None

Pre-requisites: PHA252, PHA436

This course is the fifth of nine professional experience placements embedded in the Bachelor of Pharmacy Program. This course is paired with PHA456 and embeds 120 hours of placement experience in the Ambulatory Healthcare Services (AHS) pharmacy setting. Together with PHA456, this course is designed to enhance your knowledge and understanding of a range of topics and give you practice experience of pharmacy in the AHS setting. You will further develop skills in communication and problem solving and apply your clinical knowledge under the supervision of a pharmacist preceptor. You will explore issues related to AHS services and to play an active role in the day-to-day activities of the pharmacy. You will work with other healthcare professionals and experience how the provision of primary care to patients is a team approach that includes pharmacy.

Year 5

Semester 1

PHA537 - Context for Practice III

Co-requisite: None

Pre-requisites: PHA436

The aim of this course is to further prepare students for practice as pharmacists. This course builds particularly on the previous courses of the Pharmacy Practice stream (PHA436). Students will build on their knowledge of pharmacy management and medication safety. In addition, complementary and alternative medicines, wound management and drug-drug interactions will be discussed.

PHA557 - Industrial Professional Experience Placement

Co-requisite: None

Pre-requisites: PHA425, PHA426

This course is the seventh of nine professional experience placements embedded in the Bachelor of Pharmacy Program and stands alone from the other placement experiences. The course embeds 40 hours of placement experience in the industrial pharmacy (manufacturing) setting. You will be experiencing the roles of the industrial pharmacist through a mixture of expert lectures/briefings and direct experience of the industrial work environment. The industrial placement provides an applied understanding of dosage form design, basic industrial processes (drying, mixing, filtration and granulation) and product packaging that extends your theoretical knowledge of these topics. You will identify the main roles and responsibilities of industrial pharmacists by observing their activities in research and development department, quality control and production.

PHA562 - Pharm Research Data Analysis

Co-requisite: None

Pre-requisites: PHA461

This course builds on student understanding and experience on Pharmacy research, which is a cornerstone of modern health care and professional practice. Having previously been exposed to Academic writing, Research methodology, and Critical research reviews, students will now build on their skills to understand data management and analysis for later application in Pharmacy research graduate project. This course provides information and understanding about data generation, handling, extraction, analysis and presentation.

Semester 2

PHA548 - Integrated Haematology and Oncology

Co-requisite: None

Pre-requisites: PHA215

The course involves the pharmacotherapy of haematology and oncology disorders and provides the relationship between pathophysiology and the rational drug design and use of drugs in the management of conditions of this type. There is emphasis on the biological, chemical, and immunologic basis of disease and therapy, pharmaceutical and biotechnology applications, socioeconomic considerations, and in developing patient assessment, patient care plans with monitoring and communication skills. Drug therapy principles and current guidelines for particular conditions and patient groups will be emphasized enabling students to acquire the skills necessary to provide clinical pharmacy services within these areas.

PHA538 - Transition to Practice

Co-requisite: None

Pre-requisites: PHA131, PHA537

The Transition to Practice course is designed to consolidate and apply knowledge, skills and behaviours acquired throughout the curriculum in preparation for employment e.g. residency, internship, entry-level job opportunities in practice, clinical and industrial pharmacy settings. The focus of this course is on professional preparation; development of curriculum vitae, letters of intent, personal statements, and presentation and interviewing skills. Development of other pertinent professional attitudes will be covered. Preparation for Professional Licensing Examination will also be covered in this course.

PHA549 - Advanced Therapeutics

Co-requisite: None

Pre-requisites: PHA342, PHA343, PHA447

This PHA549 Advanced Therapeutics Course builds on the knowledge and skills developed throughout the Pharmacy program. A blend of pharmacy knowledge application and skills development is utilized in the course to guide students towards becoming effective entry level Pharmacy professionals working with diverse patient populations and health care team members. These skill-set areas are structured to compliment the knowledge and skills obtained in the other courses of the Integrated Therapeutic stream covering disease states (i.e. cardiology, infectious diseases, dermatology, endocrinology, oncology and neurology, nephrology, etc.) to best prepare students to handle complex, clinical cases in a range of pharmacy environments.

PHA563 - Pharmacy Research Project

Co-requisite: None

Pre-requisites: GRD361, PHA461, PHA562

This course is a group project that builds on prior knowledge and skills obtained from Pharmaceutical Sciences, Pharmacy Practice and Integrated therapeutics to produce new information, address research questions and solve problems in the chosen field. It provides students with an opportunity to work independently and as a team in a research project to develop research and critical evaluation skills used routinely by professional pharmacists. The emphasis will be on planning a project, developing a methodology, analysing the data and disseminating the results. Students will subsequently evaluate the significance of the findings and provide a comprehensive report on their project.

Semester 3

PHA558 - Hospital 2 PEP A (3CH) and PHA559 - Hospital 2 PEP B (3 CH)

Co-requisite: None

Pre-requisites: PHA548, PHA549

This course is the eighth of nine professional experience placements embedded in the Bachelor of Pharmacy Program and is paired with PHA559.

Together with PHA559, this course is designed to further enhance your knowledge, understanding and application of skills to the practice of pharmacy in the hospital pharmacy setting (introduced in PHA353 and PHA354). You will further develop skills in communication and problem solving as a member of a multidisciplinary healthcare team under the guidance of a pharmacist preceptor. PHA558 and PHA559 build on the skills introduced in PHA353 and PHA354 by combining the individual clinical skills into overall patient care and introducing you to specialized hospital pharmacy practice including clinical trials and drug utilization and evaluation studies. You will

follow patients from admission to discharge, identifying each aspect of their stay and evaluating the pharmaceutical care provided. Your preceptor will then guide you through the development and presentation of a case study to the pharmacy team.

Pharmacy Electives

PHA022 - Cosmeceutical and Cosmetic Formulations for Pharmacists

Co-requisite: None

Pre-requisites: None

The course is designed to enable the student to be familiar with specific ingredients used in cosmeceutical and cosmetic formulations and their technical aspects especially related to skin, hair and nail cosmeceuticals. This module includes the application of sophisticated methodologies for evaluation of cosmeceuticals and emphasizes the importance of utilizing advance techniques to evaluate safety of cosmetics and cosmeceuticals.

PHA023 - Applied Pharmaceutical Microbiology and Biotechnology for Pharmacists

Co-requisite: None

Pre-requisites: PHA215

This course explores the roles of microbiology, biotechnology and biosimilars in the development of pharmaceuticals with particular emphasis on industrial production. You will study the development of pharmaceutical products based on microbiological and biotechnological concepts. The production of pharmaceuticals by fermentation, bioconversion, and DNA recombinant technology are considered.

PHA032 - Applied Communication Skills for Pharmacists

Co-requisite: None

Pre-requisites: None

This course aims to provide students with effective communication techniques to interact with patients and other health professionals to affect positive therapeutic outcomes. The course focuses on application and refinement of communication skills for pharmacists in all aspects of professional practice.

PHA033 - Applied Ethical Principles in Pharmacy Practice

Co-requisite: None

Pre-requisites: None

In this course, you will extend your knowledge of the ethical frameworks appropriate to pharmacists in the UAE and relate appropriate ethical behavior to the scope practice of the professional and the patient's health. You will apply adopted ethical values in case-based scenarios in different areas of therapeutics and pharmacy practice to optimize skills in ethical decision-making.

PHA041 - Clinical Trial Management for Pharmacists

Co-requisite: None

Pre-requisites: None

This course provides the detailed knowledge to design, conduct, and audit clinical trials. The course emphasizes on volunteer informed consent, management of clinical trials, and the roles and responsibilities of various parties and regulatory in clinical trials.