Bachelor of Pharmacy Course Descriptions

PHC111 Introduction to Pharmacy and the Healthcare System (2-0-2)

This course introduces pharmacy practice in a variety of healthcare system settings. Topics include introduction to the profession of pharmacy, including the historical perspective, major routes of pharmacist employment and the future of the practice of pharmacy, the roles of the pharmacists and pharmacy technicians. The students should be able to understand medical terminology and abbreviations, drug delivery systems, handling of prescription and medication orders, medication distribution systems, managing medication use, impact of technology on daily functions of the healthcare system, the health insurance system, basic principles of pharmacy law and ethics, patient counselling and pharmaceutical care. Pre-requisite: None

PHC112 Pharmaceutical Organic Chemistry I (2-2-3)

This course presents the fundamentals of certain topics in pharmaceutical organic chemistry. It covers some important areas in organic chemistry, which include aliphatic and aromatic hydrocarbons, alkyl and aryl halides, alcohols, ethers, and epoxides. The course is a prerequisite for other pharmaceutical science courses that are of direct relevance to pharmacy practice. It emphasizes the pharmaceutical and medicinal importance of the functional groups derived from the mentioned classes of organic compounds in drug molecules. In its practical component, the course introduces the student to the methodologies used in testing of chemical and physical properties of functional groups by wet chemistry (and spectroscopic means). The pharmaceutical and medicinal relevance of the course will be demonstrated by case studies and structure challenges presented in both theory and practical sessions. Prerequisite: None

PHC113 Principles of Human Anatomy and Physiology I (2-2-3)

The course provides basic knowledge of normal human body structure and function necessary for students at College of Pharmacy to be capable of understanding other related pathological and clinical medical courses. It also assists students to properly understand the pharmacology of drugs and its application in clinical pharmacy. Pre-requisite: None

PHC121 Pharmaceutical Analysis-I (2-2-3)

This course covers the theoretical basis and introductory to quantitative analysis techniques including chemical equilibrium, dissociation of acids and bases, pH calculations, and buffer solutions. It also covers the fundamentals and applications of various quantitative volumetric and gravimetric methods that are used in pharmaceutical analysis. Pre-requisite: None

PHC122 Pharmaceutical Organic Chemistry II (2-2-3)

This course is a continuation of "Pharmaceutical Organic Chemistry-I" course. The course includes classification, nomenclature, basic chemical reactions and reaction mechanisms of the following classes of natural, synthetic and semisynthetic organic compounds: phenols, aldehydes/ketones, carboxylic acids and their derivatives, amines, and heterocycles. The course also introduces the student to chirality aspects of organic compounds. The course is a prerequisite course for other pharmaceutical science courses that are of direct relevance to pharmacy practice. The course emphasizes the pharmaceutical and medicinal importance of the studied functional groups as well as chirality. Laboratory work includes study of physical

properties of different classes of compounds, specific chemical reactions, identification of organic compounds by chemical and spectroscopic analysis, and stereochemical properties of selected classes of organic compounds. The pharmaceutical and medicinal relevance of the course will be demonstrated by case studies and structure-challenge problems. Prerequisite: PHC112

PHC123 Principles of Human Anatomy and Physiology II (2-2-3)

The course provides basic knowledge of normal human body structure and function necessary for students of Faculty of Pharmacy & Medical Sciences to be capable of understanding other related pathological and clinical medical courses. It also assists students to properly understand the pharmacology of drugs and its application in clinical pharmacy. Pre-requisite: PHC113

PHC231 Pharmaceutical Calculations (2-0-2)

This course provides an introduction to the metric, avoirdupois, and apothecary systems of measurement and the basic knowledge of pharmaceutical calculations needed in pharmacy practice for dispensing and compounding of medications. It includes an introduction to prescriptions, general dispensing procedures and dosage forms. Topics include ratio and proportion, dosage determinations, percentage calculations, reducing and enlarging formulas, dilution and concentration, allegations, aliquots, specific gravity and density, flow rates and Latin terms. Pre-requisite: NA

PHC232 Biochemistry I (2-2-3)

This course deals with the general aspects of Chemistry of carbohydrates, amino acids polypeptides and proteins, nucleic acids, lipids, vitamins, and enzymes. This includes: the structure of these compounds, their classification and biomedical importance. The course relates structure of the compounds to their function. Pre-requisite: PHC122 and PHC123

PHC233 Microbiology (2-2-3)

This course takes in consideration the microbiology as an extensive subject with many ramifications. It is designed to introduce the students to the microbe's world exemplified by Prokaryotes, Eukaryotes and the unique properties of the viruses. Trying to give a brief and up-date presentation of those aspects of medical organisms that can inflict damages to human health. Antibiotics will be discussed at length. Pre-requisite: PHC123

PHC234 Pharmaceutical Analysis-II (2-2-3)

This course provides students with fundamentals and hands-on practice on essential instrumental techniques used in the pharmaceutical analysis. In this course, the basics of electrochemical, absorption spectrophotometric, and atomic spectroscopic methods of analysis as well as common molecular spectroscopic techniques will be covered. Pre-requisite: PHC121

PHC235 Artificial Intelligence in Pharmacy (3-0-3)

This course introduces students to the rapidly evolving field of Artificial Intelligence (AI) and its application in pharmacy practice. Students will learn how AI tools—from machine learning algorithms to robotics—can enhance drug discovery, formulation optimization, pharmaceutical care, and clinical decision support. Drawing on real-world examples and case studies, the course

emphasizes ethical and regulatory considerations to ensure responsible, patient-centered use of AI in the pharmacy profession. Pre-requisite: AIH111

PHC241 Drug information and Literature Evaluation (2-0-2)

The purpose of this course is to provide students a comprehensive overview of Drug Information principles, resources, and literature review evaluation. This course will improve student's knowledge and skills towards prepare them to their future practice to be able to answer drug information's queries from public as well as health care professionals, evaluate the literature based on the evidence-based medicine. Pre-requisites: PHC111

PHC242 Introduction to Health Economics (2-0-2)

The purpose of this course is to provide students an introduction about the fundamentals, principles, concepts, methods, and applications of health economics. This course will prepare the students for the pharmacoeconomics at the advanced level. Pre-requisite: PHC111

PHC243 Biochemistry II (2-2-3)

The course covers the following topics: bioenergetics, metabolism of carbohydrates lipids, proteins, energy releasing and energy consuming metabolic processes. The regulation of synthesis and breakdown of sugars, lipids, nucleic acids and amino acids. The biochemistry of specialized biological materials. Biosynthesis of the macromolecule's proteins, DNA, and RNA. Pre-requisite: PHC232

PHC244 Pharmaceutical Analysis-III (2-2-3)

This course aims to introduce to the students a concept of applying the available instruments used for separation of mixtures as well as qualitative and quantitative analysis of medicinal and pharmaceutical raw materials and formulated medicines. The course covers the quality issues in the laboratory, different chromatographic methods used in qualitative and quantitative analysis of medicinal and pharmaceutical raw materials and formulated medicines, and also analytical method validation process as per the national and international regulatory guidelines. Pre-requisite: PHC234

PHC245 Pharmaceutical Technology-Unit Operations (2-2-3)

This course provides theoretical background and practical demonstration of different manufacturing unit processes that are applied in pharmaceutical industries. Topics includes heat transfer, filtration, particle size reduction, particle size analysis, mechanisms of mixing, powder flow, granulation, and drying. The course also comprises the design and operation of clean rooms with special emphasis on quality assurance & good manufacturing practice guidelines. Pre-requisite: PHC231

PHC246 Pharmacology-I (2-2-3)

This course deals with the general aspects of pharmacokinetics and pharmacodynamics, the pharmacological actions and the therapeutic uses of drugs acting on the autonomic nervous system, the respiratory system and dugs acting on local hormones (autacoids). Various groups of drugs are studied including their pharmacokinetics, mechanism of actions, adverse effects, indications and contraindications'-requisites: PHC232.

PHC351 Biostatistics and Research Design (2-0-2)

The purpose of this course is to provide students a comprehensive overview of research methods and biostatistics. This course will improve student's knowledge and skills towards research methods and analysis. This course will prepare students to conduct their graduation project as well as conduct research in pharmacy practice in the future. Pre-requisite: STA112

PHC352 Immunology (2-0-2)

The aim of this course is to introduce the students to the basic concepts of immunology; How does the immune system work? What are the molecular and cellular components and pathways that protect an organism from infectious agents or cancer? Topics include immune system development, humoral & cell-mediated immunity, disease and treatments involving immunization, immunodeficiency, and autoimmunity. Pre-requisites: PHC243

PHC353 Pharmacy Management and Marketing (2-0-2)

The course will cover concepts of personal, human resource and business management in general and in pharmacy practice. It also covers the principles of marketing theories and applications. Pre-requisites: PHC111.

PHC354 Medicinal Chemistry I (2-2-3)

This course introduces the student to the basic principles of medicinal chemistry. It deals with the relationship between chemical structure and biological activity of medicinal agents (drugs). Topics covered in part 1 of the course include sources of drugs, the effect of physicochemical properties (ADMET) of drugs, sites of drug action, effect of molecular modifications on drug-site-of-action binding and biological response (structure-activity relationship, SAR), concepts of pharmacophores and auxophores in drug design and development, drug metabolism and its role on drug deactivation, activation and drug development. As well, stereochemical aspects of drug molecules including chiral-drug designations, biological activity, metabolic stability and chiral-switch drugs will be covered in part 1 of the course. Part 2 of the course is devoted to the study of selected chemotherapeutic agents with emphasis on the mechanism of action, structure-activity relationship and aspects developed in part 1 of the course. Lab work will focus on physicochemical and pharmacodynamic aspects of drugs. Relevance of the course to pharmacy practice will be illustrated by case-study problems presented in the practical class sessions. Prerequisites: PHC243

PHC355 Pharmaceutical Dosage Form I (Solutions) (2-2-3)

This course introduces pharmaceutical solutions dosage forms and basic principles and techniques needed for compounding simple solutions. The course covers physical pharmacy principles which apply to pharmaceutical solutions, the basic skills and abilities needed to identify various pharmaceutical incompatibilities and the basic techniques needed for extraction of crude drugs. Topics includes states of matter, phase equilibria and phase rule, electrolyte and nonelectrolyte solutions and their colligative properties, solubility and distribution phenomena and internal and external solutions. Pre-requisite: PHC245

PHC356 Pharmacology-II (2-2-3)

Deals with the pharmacological actions and the therapeutic uses of drugs acting on the cardiovascular system, the renal system, the gastrointestinal tract and the hematopoietic system. Various groups of drugs are studied including their pharmacokinetics, mechanism of actions, adverse effects, indications and contraindications. Pre-requisites: PHC246

PHC357 Phytochemistry (2-2-3)

This course covers the study of the Chemistry and Therapy of active constituents in Medicinal Plants such as Carbohydrates, Lipids, Volatile Oils, Tannins, Glycosides and Alkaloids. The study includes the chemical and physical properties, isolation, and identification of the active constituents. Pre-requisites: PHC122 & PHC244

PHC361 Infection control and antimicrobial stewardship (2-0-2)

The purpose of this course is to provide students a comprehensive overview of infection control, antimicrobial resistant crisis worldwide, it is impact on patient's life, economics and the impact of antimicrobial stewardship. Pre-requisite: PHC352

PHC362 Pharmaceutical Biotechnology (2-0-2)

This course introduces the student to the field of biotechnology with especial emphasis on its applications in the preparation of biopharmaceuticals. The course entails definitions, brief history and major areas of contribution of biotechnology. The course shall also cover recombinant DNA technology including cloning of DNA, PCR and Gene libraries. In addition, different methods adopted for the preparation of biotechnology drug products and their evaluation, handling and storage shall be covered. Current marketed biotechnology drug products, as well as the future prospects of biotechnology shall be discussed. Pre-requisite: PHC352.

PHC363 Medicinal Chemistry II (2-2-3)

In this course, the following aspects of major classes of medicinal agents will be covered: discovery and development, classification, mechanism of action, structural features, toxicity, stereochemical aspects, structure activity relationships (SARs), and major metabolic pathways. The detailed knowledge and understanding of targets and binding by various medicinal compounds are discussed with emphasis on the chemical basis of drug action. The classes of medicinal agents covered include drugs acting on neurotransmitters ant their receptors, drugs acting on histaminergic receptors, cardiovascular drugs including antihyperlipidemic drugs, analgesics (NSAIDS and narcotic analgesics), drugs acting on the CNS, local anesthetics, GIT drugs (with emphasis on proton-pump inhibitors) and antidiabetics (oral and parenteral). Relevance of the course to pharmacy practice will be demonstrated by study case problems and structure challenge exercises. Prerequisites: PHC354.

PHC364 Pharmaceutical Dosage Form II (Coarse dispersions and semisolids) (2-2-3)

This course aims to provide students with basic knowledge and formulation procedures related to pharmaceutical dispersions such as colloids, suspensions, emulsions, ointments, creams and aerosols. It also covers rheological properties of both Newtonian and non-Newtonian systems and the physicochemical principles needed to explain characteristics and behavior of pharmaceutical dispersions. Pre-requisite: PHC355

PHC365 Pharmacology-III (2-2-3)

This course deals with the pharmacological actions and the therapeutic uses of drugs acting on the central nervous system and endocrine system. Various groups of drugs are studied including their pharmacokinetics, mechanism of actions, adverse effects, indications and contraindications. Pre-requisites: PHC356

PHC366 Phytotherapy (2-2-3)

The course covers the alternative Medical Systems, mainly Herbal therapy, using medicinal plants and their active constituents. The study includes pharmacodynamic and therapeutic effects of these constituents for treatment of different ailments, as well as the appropriate dosage forms for administration, side effects, contraindication and drug interactions. Monographs on Herbal Pharmaceutical Preparations and Materia Medica of selected medicinal plants are included in the study. Prerequisite: PHC357.

PHC471 Pharmacoepidemiology and Pharmacovigilance (2-0-2)

The purpose of this course is to provide students with a basic understanding of the concepts and practice of pharmacoepidemiology and pharmacovigilance, and to apply these skills to a currently unresolved drug safety issue. Pre-requisite: PHC365

PHC472 Pharmacogenomics and Personalized Medicine(3-0-3)

This course focuses on relationships between human genetic variability and drug responsiveness, susceptibility to disease, and disease severity. Scientific, clinical, legal, and ethical challenges in applying pharmacogenomics to drug discovery and clinical development. Professionals from such disciplines as human genetics, pharmacology, pharmaceutical sciences, genomic medicine, clinical and translational sciences, law, and regulatory affairs provide an integrative view of the application of pharmacogenomics to personalized medicine. Pre-requisite: PHC362 and PHC 365

PHC473 Pharmaceutical Dosage Form III (Solid Dosage forms) (2-2-3)

The course comprised of principles and techniques involved in the formulation, preparation and evaluation of solid dosage forms. It covers physical properties of powders, preparation of bulk and divided powders, as well as effervescent and non- effervescent granules. Capsules and tablets types, methods of production/filling and storage are described. The course also covers rectal drug absorption, formulation and evaluation of suppositories. Official and non-official quality control tests of tablets are described. Pre-requisite: PHC364

PHC474 Pharmacotherapy I (2-2-3)

The purpose of this course to provide students with the essential knowledge about pharmaceutical care, cardiovascular and respiratory diseases in order to improve their ability & skills to provide the effective pharmacist care to the patients; identify their needs & Drug Related Problems (DRPs); design the management plan and educate & counsel the patients. Pre-requisite: PHC365

PHC475 Introductory Pharmacy Practice Experience (IPPE): Community Pharmacy Training -I (3-0-3)

The objective of this initial training is to develop students' communication skills, knowledge of community pharmacy practice and to become familiar with different trade of the over- the- counter (OTC) and generic names of some drugs available in the market. In addition, students are expected to understand how to respond to commands in the different types of prescriptions. Pre-requisite: After completion of 99 CH.

PHC481 OTC and self-care (2-0-2)

This OTC course is designed to establish a strong knowledge of OTC drugs in all of its aspects and making pharmacist's job to be patient oriented and not product oriented. This will include monitoring, screening and evaluating drug treatment regimens either in community or hospital settings. In particular, symptoms associated with: gastro-intestinal tract, respiratory, skin, central nerves system, pediatrics, women's health, men's health, eyes and ears, holiday healthcare will be considered with respect to: possible causes; symptoms and signs; treatment available; counseling points; and when to refer to doctors. Pre-requisites: PHC473 and PHC474.

PHC482 Pharmaceutical Dosage Form IV (Sterile Dosage forms) (2-2-3)

This course covers sterile products including parenteral and ophthalmic preparations; their advantages & disadvantages, formulations, quality control tests and various sterilization procedures. It also covers basic principles of drug stability, routes of drug degradation and various means of avoiding them. In addition to the aseptic techniques applied during the preparations of sterile products. The course also includes an introduction to sustained released products, as well as packaging of pharmaceuticals. Pre-requisite: PHC473

PHC483 Pharmacotherapy II (2-2-3)

The purpose of this course to provide students with the essential knowledge about Gastrointestinal disorders; arthritic disorders; infectious diseases; nutritional issues and renal disorders in order to improve their ability & skills to provide the effective pharmacist care to the patients; identify their needs & Drug Related Problems (DRPs); design the management plan and educate & counsel the patients; assess the nutritional status and design the nutritional plan. Pre-requisite: PHC474

PHC484 Graduation Project (3-0-3)

By the time students reach this level (116 CH) they would have studied a range of pharmaceutical and clinical science topics and have gained some experience of the techniques used in research, through lecture, practicals, tutorials, and workshops. This will enable students to investigate different areas of pharmacy profession under faculty member supervision. In addition, the student must submit their final portfolio which they compiled from Semester-1. The guidelines related to project proposal preparation, final project submission and portfolio requirements will be briefed and copies of the same will be provided to students.

PHC485 Biopharmaceutics and Pharmacokinetics (3-2-4)

This course provides a fundamental understanding of the principles of biopharmaceutics and pharmacokinetics that can be applied to evaluation of drug therapy. Included in this course is a study of interrelationship of drug absorption, distribution, metabolism and excretion (ADME). The course explains the effects of physicochemical properties of the drug, the dosage form in which it is given, and the route of administration on the rate and extent of drug absorption into the systemic circulation. The course explores the application of pharmacokinetic models that aid in the design and optimization of the dosage regimen. Pre-requisite: PHC473

PHC486 Introductory Pharmacy Practice Experience (IPPE): Community Pharmacy Training -II (3-0-3)

Through the utilization of selected community pharmacies and competency based objectives, the student will gain an appreciation for the profession of pharmacy as practiced in the community and develop the professional attitudes, judgment and skills needed to function in this setting. These courses are designed to enable students to: acquire advanced knowledge and proficiency in community pharmacy management, process prescriptions in an efficient manner compatible with advanced skills, acquire additional exposure to pharmacy operations and to different practitioners' disease approach, develop the skills necessary to provide pharmaceutical care services and acquire increased proficiency in counseling patients on health and drug-related matters. Pre-requisite: PHC475.

PHC591 Digital Pharmacy and Health Informatics (2-0-2)

The purpose of this course is to introduce students about the theory and concepts of digital pharmacy and health informatics. Digital pharmacy focuses on electronic prescription management, tele-pharmacy, online pharmacy, and the use of artificial intelligence and machine learning in pharmacy practice, with a focus on automation and robotics. Moreover, health informatics provide knowledge on digital health tools, remote counseling, patient monitoring, electronic health records, telemedicine/telehealth, e-professionalism, mobile apps, and wearable devices. They will explore regulatory and ethical considerations involved in the usage of digital health tools, ensuring a thorough understanding of data privacy, security and compliance. Students will learn the application of informatics skills and knowledge to advance individual health, public health, and health-related research in real-world settings. Pre-requisite: PHC235

PHC592 Pharmacoeconomics (2-0-2)

The purpose of this course is to provide students a comprehensive overview of pharmacoeconomics concepts, methods and applications. This course will improve student's knowledge and skills towards the essential pharmacoeconomics issues in their future practice. Pre-requisite: PHC242 and PHC483

PHC593 Pharmacy law and Ethics (2-0-2)

The course will cover ethical principles and codes that govern the practice of pharmacy and patient care; the different ethical issues pharmacists encounter in daily pharmacy practice; competency of pharmacists and standards of practice expected to be met by regulatory and licensing bodies locally and internationally; the laws and regulations governing pharmacy practice and drug control in the UAE. Pre-requisite: PHC483.

PHC594 Applied Pharmacokinetics (2-2-3)

The course focus on how to integrate basic pharmacokinetic principles when adapting and evaluating therapeutic drug dosing in clinical practice. It relates to the individualization of patient drug therapy, through the proper interpretation of drug serum concentrations. During this course students will acquire in-depth knowledge on design of drug dosing schemes, and how doses may be adapted to individual patients, with especial focus on selected patient cohorts like elderly, children and critical ill patients. Pre-requisite: PHC485

PHC595 Pharmacotherapy III (2-2-3)

The purpose of this course to provide students with the essential knowledge about neurological and psychiatric diseases/ disorders in order to improve their ability & skills to provide the effective pharmacist care to the patients; identify their needs & Drug Related Problems (DRPs); design the management plan and educate & counsel the patients. Pre-requisite: PHC483

PHC596 Toxicology (2-2-3)

This course covers the adverse and toxic effects of drugs and many other chemicals that may be responsible for household, environmental and industrial intoxication. It also covers heavy metals toxicity and its management, common poisons and their antidotes, air pollutants, solvents and vapors and toxicity of pesticides. In addition, this course covers the classification, mechanism of action, clinical indications and adverse effects of antimicrobials, antiviral, antifungal, anthelmintic, and antineoplastic agents.Pre-requisite: PHC472

PHC597 Introductory Pharmacy Practice Experience (IPPE): Pharmaceutical Technology Training (2-0-2)

This training program was designed to provide pharmacy students with the main principle of drug industry and to understand the main role of pharmacists in such filed. Students during the training program will be asked to attend and to take part in all sections of drug industry such as: production line, quality control, quality assurance, raw material handling, and marketing department. Pre-requisite: PHC482.

PHC5101 Advanced Pharmacy Practice Experience (APPE): Critical Care (3-0-3)

The aim of this rotation is to give the student opportunity to practice their knowledge of the management of patients with critical care diseases/conditions to provide pharmaceutical care services to those patients. In this rotation the students will improve their clinical skills by participate in patient's assessment, design the goals of treating them, design the therapeutic interventions in order to achieve the desired outcome of treating them, improve their adherence towards the management plan by the education & counseling. Pre-requisite: After completion of 151 CH.

PHC5102 Advanced Pharmacy Practice Experience (APPE): Infectious Diseases (3-0-3)

This rotation is designed to improve the students' knowledge, cognitive, communications and Clinical skills relating to the management of patients with, UTIs, influenza, pneumonia, gastroenteritis and other infectious diseases. In this rotation the students will improve their clinical skills by interviewing the patients to: collect and assess their specific needs, identify the actual & potential drug therapy problems; suggest the management plan; evaluation of therapeutic outcomes and educate & counsel them about their medications, disease risk factors and management. Pre-requisite: After completion of 151 CH.

PHC5103 Advanced Pharmacy Practice Experience (APPE): Hospital Pharmacy Training (3- 0-3)

This training course will familiarize the student to hospital pharmacy practice in the inpatient and outpatient settings. The training is designed to provide students with the preparation needed to understand the practice environments they will enter and to expose them to areas of pharmacy practice they may have not previously considered within the hospital environment. The student will learn different concepts in the hospital pharmacy, the philosophy of pharmacy consultant services and how to implement pharmaceutical care services. Moreover, the student will develop professional attitudes, judgment and skills needed to function in this setting. He will learn methods used to monitor drug therapy in the patient, treatment of common disease states seen, and how to effectively communicate with patients and health professionals regarding drug utilization. Where available, the student will be involved in the different operations carried out in the inpatient setting. Pre-requisite: After completion of 151 CH.

PHC5104 Advanced Pharmacy Practice Experience (APPE): Oncology & Surgery (3-0-3)

This rotation is designed to improve the student's knowledge and clinical skills related to the management of oncology diseases such as: colorectal cancer, breast cancer, prostate cancer, lung cancer, leukemia's and ovarian cancer. At this rotation the student's will train on: the doses calculations of the recommended chemotherapy regimens, identify the potential drug related problems & design the prophylaxis therapies to minimize it, counsel patients about their disease and palliative care. The students will also be able to review the use of medications in surgical process and also medicines use in surgical infection prevention, local anesthetics and analgesics. Pre-requisite: After completion of 151 CH.

PHC5105 Advanced Pharmacy Practice Experience (APPE): Internal Medicine (4-0-4)

The aim of this rotation is to give the student opportunity to practice their knowledge of the management of: asthma, COPD, Diabetes, angina, hypertension, renal failure, Gout & Hyperuricemia, Rheumatoid arthritis, heart failure and Anaemias to provide pharmaceutical care services to those patients. In this rotation the students will improve their clinical skills by participate in patient's assessment, design the goals of treating them, design the therapeutic interventions in order to achieve the desired outcome of treating them, improve their adherence towards the management plan by the education & counselling. Pre-requisite: After completion of 151 CH.

College Elective Course Descriptions

PHCE1 Drug Discovery and Development (2-2-3)

This course will introduce students to the fundamentals of drug discovery and development from both preclinical and clinical perspectives. Subjects discussed include drug sourcing, target identification and validation, hit discovery, identification of pharmacophores, hit-to-lead optimization, lead-to-drug optimization through functional-group modifications and pharmacokinetics (ADMET) optimization. The multi-disciplinary nature of the research in drug development process will be highlighted. Pre-clinical and clinical testing, regulatory, safety evaluations, bioavailability, patenting, manufacturing and marketing aspects will be presented and discussed. The use of computer-based methods and combinatorial chemistry/high-throughput screening as important tools in drug development will be emphasized. The course will qualify the student for considering "Drug Discovery and Development" as a career after reading for a higher degree in the subject. Prerequisite: PHC 363.

PHCE2 Gene therapy (3-0-3)

Discussion of the diagnosis of genetic disorders and how the causal genes be identified and isolated. The course teaches the basic science of gene therapy, gene delivery vectors, expression of transferred genes, and current gene therapy protocols in humans. The course allows the students to assess the current status and promise of gene therapy and recognize the advantages, disadvantages, and limitations of gene therapy. Prerequisite: PHC362.

PHCE3 Public Health Education (3-0-3)

The purpose of this course is to introduce students to the concepts of public health and health promotion/education in primary, secondary and tertiary settings. This course will prepare the students with the necessary skills to improve the health and wellbeing of individuals and communities. The course will have a particular emphasis on the health education. Prerequisite: PHC111.

PHCE4 Radiopharmacy (2-2-3)

This course provides a comprehensive discussion of the fundamentals of the field of radiopharmacy. It covers the formulation and application of radiopharmaceuticals. Topics include the preparation and quality control of clinically useful radiopharmaceuticals. Procedures and techniques involved in handling, disposition, use of radioisotopes in radiopharmacy practice and regulatory aspects will be presented and discussed. Diagnostic and therapeutic uses of radiopharmaceuticals and their adverse reactions are included. The course prepares the student for reading for a higher degree in radiopharmacy and considering the field as a career. Prerequisite: PHC363 and PHC364.