

## Brief Course Descriptions

Course Title & No.	Brief Course Description
<b>Biology (0200100)</b>	The course of biology is designed to give knowledge of the basic processes of life; function of components of eukaryotic cells, structure of biomolecule, structure and function of proteins, membranes and, the role of enzymes. The course helps the students to understand cell signaling, DNA replication, protein synthesis and, biotechnology techniques.
<b>Human Anatomy and Histology (0200110)</b>	This course covers the macro and micro structure of major body systems: integumentary, muscular, skeletal, cardio-vascular, lymphatic, respiratory, digestive, nervous, endocrine, urinary and reproductive systems
<b>Physiology (0200220)</b>	This course covers cell physiology, molecular aspects of cell biology, and the functions of major body systems: integumentary, muscular skeletal, cardiovascular, lymphatic, respiratory, digestive, nervous, endocrine, urinary, and reproductive systems, body fluid and electrolytes, along with homeostatic mechanism maintaining normal function of the body, with demonstrations of relevant measurements.
<b>Pathophysiology (0200230)</b>	This course covers introduction to pathology, the importance of pathophysiology for pharmaceutical care; its correlation to various diseases, the basic principles of diseases including inflammation and repair, degeneration, disturbances of hemodynamics, developmental defects, neoplasm, certain cardiovascular, respiratory, bone, joints, and endocrine pathogenic problems.
<b>Microbiology and Immunology (0200240)</b>	This course covers classification, structure, culture, identification, properties of medically significant bacteria, pathogenic mechanisms of microorganism, principles of infectious diseases, host – parasite relationship, Virology includes virus structure multiplication, diseases, mechanism of transmission, defenses against infection and antiviral drugs.
<b>Chemistry (0201100)</b>	The course presents fundamentals of certain topics in chemistry which includes basic knowledge of the atom, the electronic structure and configuration of various atoms. It also describes the importance of the periodic table and chemical bonding. The course details the importance of acids and bases, solutions and solubility. The course also includes topics on gases and thermochemistry
<b>Pharmaceutical Analytical Chemistry (0201120)</b>	This course covers preparation of solutions, indicators for determining end points, potentiometric determination of end points, acidbase reactions, precipitation reactions, redox reactions, complexation reactions, acidbase reactions, nonaqueous solvents, gravimetric analysis, spectrometry, geometric analysis, volumetric measurements, optic rotation, specific gravity as methods for analysis of drugs.
<b>Pharmaceutical Organic Chemistry-1 (0201210)</b>	This course presents the fundamentals of certain topics in organic chemistry. It covers some important areas in organic chemistry, which includes aliphatic hydrocarbons, alkyl halides, alcohols, ethers and epoxides, aldehydes, ketones, carboxylic acids and their derivatives, and amines. It emphasizes on the pharmaceutical importance of these functional groups. The pharmaceutical organic chemistry course is aimed to present the highlights of organic chemistry and its applications in a brief and suitable manner relation to the pharmaceutical field of study.
<b>Pharmaceutical Organic Chemistry-2 (0201211)</b>	This course presents the fundamentals of certain topics in organic chemistry. It covers some important areas in organic chemistry, which includes aromatic hydrocarbons, aryl halides, phenols, nitro compounds and anilines. It also covers heterocyclic compounds and stereochemistry, isomerism, chirality and optical activity. The course aimed to present the highlights of organic chemistry and its applications in a brief and suitable manner related to the pharmaceutical field of study.
<b>Biochemistry and Biotechnology (0201240)</b>	This course covers chemistry of proteins, lipids, carbohydrates and DNA, enzymology, bioenergetics, and metabolic pathways of energy utilization, mitochondrial respiration and oxidative phosphorylation, active transport, phosphate pathway and Krebs cycle, nucleic acid metabolism including DNA replication and repair, RNA and protein synthesis, recombinant and DNA technology, carbohydrates, fats, amino acids, and hormones metabolism.

<b>Pharmaceutical and Medicinal Chemistry (1)</b> <b>(0201450)</b>	This course covers physicochemical properties of drug molecules in relation to drug ADME, drug nomenclature program , international nonproprietary names , structure activity relationships, fundamental pharmacophores for drugs used to treat diseases, pharmaceutical medicinal chemistry of drugs affecting central nervous system.
<b>Pharmaceutical and Medicinal Chemistry (2)</b> <b>(0201451)</b>	This course covers pharmaceutical medicinal chemistry of cardiovascular drugs and diuretics, GIT drugs, respiratory drugs, endocrinology and related drugs, anti-infective drugs, radio nuclides, and antineoplastic.
<b>Physical Pharmacy</b> <b>(0203210)</b>	The course comprises the application of physicochemical principles to pharmaceutical systems like - solubility and distribution phenomena, buffers, rheology, inter- facial phenomena, isotonic solutions, complexation, stability and reaction kinetics
<b>Pharmaceutics (1)</b> <b>(0203220)</b>	This course covers weights and measures, weighing and measuring, density and specific gravity, pharmaceutical calculations, significant figures, fractions, exponents, powers and roots, laws and rules logarithmic calculations, household equivalents, dosage calculation, problem solving methodology, stock solutions , and milli-equivalents, molecular structure, statistics in pharmacy, properties and states of matter, solution and phase equilibriums,
<b>Pharmacognosy</b> <b>(0203230)</b>	This course covers structure of animal and plant cells, basic botanical structure, microscopy, active constituents, uses and storage of Pharmacopoeial medicinal herbs, medicinal herbs containing carbohydrates, fixed oils, tannins, alkaloids, glycosides, volatile oils, gums and mucilage, drug-medicinal-herbs interactions.
<b>Phytochemistry and Complementary Medicine</b> <b>(0203270)</b>	This course covers composition, classification, structure, physicochemical properties, occurrence, analysis and uses of carbohydrates, glycosides lipids, peptides, polypeptides, alkaloids, volatile oils, resins gums and mucilage. Also, it provides types, limitations and uses of acupuncture, acupressure, aroma therapy, hydration therapy, homeopathy and other complementary medicines.
<b>Intro. Professional Practice Experience (1)</b> <b>(0203290)</b>	This is an introductory pharmacy practice experience carried out to develop students practice skills in interaction with community pharmacists; assistant pharmacists and patients, arrangement and storage of medications, dispensing and recording of prescriptions and identifying medicaments grouping and their producing companies. A special logbook is designed for this course
<b>Pharmaceutics (2)</b> <b>(0203320)</b>	This course cover micromeretics, physicochemical principles of dosage forms, preformulation classification, types, ingredients, production on large scale, quality control of powders, granules, capsules, tablets, controlled release products, suspensions, semisolid and heterogeneous drug delivery systems.
<b>Pharmacoepidemiology and Biostatics</b> <b>(0203340)</b>	This covers the application of epidemiology to the study of drug use and outcomes in large population, studies that provide an estimate of the probability of beneficial effects in populations and other parameters relating to drug use, benefits and methods of continual monitoring of untoward effects and other safety – related aspects of drugs, recall and withdrawal of drugs from the market.
<b>Medication Dispensing and Distribution System</b> <b>(0203350)</b>	This course covers preparation and dispensing of prescription, patient medication profiling and issues of distribution systems and the related activates conduct by the hospital pharmacist.
<b>Biopharmaceutics and Pharmacokinetics</b> <b>(0203360)</b>	This course covers physicochemical factors affecting drug absorption, dissolution rate as rate determining step, generic equivalence and its implication in practice, bioavailability – bioequivalency and dosage uniformity. Pharmacokinetics includes basic principles of ADME, kinetic principles of pharmacodynamics design, and different models of drug distribution, multiple dose administration.

<p align="center"><b>Pharmacology (1)</b> <b>(0203380)</b></p>	<p>This course covers mechanism of action of drugs in various categories, dose – response relationship, pharmacodynamics of drug action, ADME, drug receptor interactions, cellular and molecular targets of drug action, pharmacology of drugs affecting the autonomic nervous system and central nervous system, autacoids and their antagonists, non-narcotic analgesics-antipyretics.</p>
<p align="center"><b>Intro. Professional Practice Experience (2)</b> <b>(0203390)</b></p>	<p>This is the second introductory pharmacy practice experience carried out to improve student's practice skills in interaction with more health care professionals as physicians besides community pharmacists, professional attitudes, confidence and personal responsibilities, dispensing and prescriptions.</p>
<p align="center"><b>Pharmacology (2)</b> <b>(0203480)</b></p>	<p>This course covers the pharmacology of cardiovascular drugs, diuretics, GIT drugs, respiratory drugs, endocrinology and related drugs, anti-infective drugs, and antineoplastic.</p>
<p align="center"><b>Intro. Professional Practice Experience (3)</b> <b>(0203490)</b></p>	<p>This is carried out to optimize student's skills for interaction with patients through self-care and selection non-prescription drugs, conducting physical assessment of patient referral, direct interaction with health care professionals for drug related problems, interpreting and evaluating patient information, dispensing and administrating medications, assessing patient's adherence, and documenting interventions in patient records. A special logbook is designed for this course.</p>
<p align="center"><b>Pharmacogenomics</b> <b>(0204300)</b></p>	<p>This covers the genetic basis for diseases and drug metabolism due to glucose 6-phosphate dehydrogenase, globin and heme metabolizing enzymes, catechol –o–methyltransferase, thiopurine methyl transferase, glycolytic enzymes, dihydropyrimidine dehydrogenase, choline esterase, cytochrome P450 isoenzyme(CYP2D6),cytochrome P450 isoenzyme(CYP2C19), HGPTASE and genome and proteomic principles in relation to disease and drug development.</p>
<p align="center"><b>Toxicology and First-Care</b> <b>(0204410)</b></p>	<p>This course covers the mechanism of toxicity, toxic effects of different agents on the body, including drug overdose, toxic signs, drug abuse, and toxicity of: alcohol, barbiturates, hypnotics, inhalants marijuana, nicotine, amphetamine cocaine, hallucinogens, anabolic steroids, pesticides, insecticides and pollutants with demonstrations. Also, this course includes application of statistics in biological assays and clinical studies.</p>
<p align="center"><b>Marketing and Pharmacoeconomics</b> <b>(0204420)</b></p>	<p>This course covers an introduction to economics, definition of economic terms, economic principles, concepts of Pharmacoeconomics for drug selection, application of economic theorists of evaluation and quality of life concepts to improve allocation of limited health care resources. Marketing section covers functions of pharmaceutical marketing department, selling, transport, distribution, storage and order-system, principles of promotion.</p>
<p align="center"><b>Pharmacotherapy (1)</b> <b>(0204430)</b></p>	<p>This course covers the epidemiology, etiology, Pathophysiology, principles of non-pharmacological and drug treatment, evaluation of clinical trials, and drug monitoring of certain gynecological, obstetric, pediatric, renal and urological diseases.</p>
<p align="center"><b>Pharmacotherapy (2)</b> <b>(0204431)</b></p>	<p>This course covers the epidemiology, etiology, Pathophysiology, principles of non-pharmacological and drug treatment, evaluation of clinical trials, and drug monitoring of certain nutritional, cardiovascular infectious diseases, eye disorders and skin disorders.</p>

<b>Pharmacotherapy (3)</b> <b>(0204432)</b>	This course covers the epidemiology, etiology, pathophysiology, principles of non-pharmacological and drug treatment, evaluation of clinical trials, and drug monitoring of certain neurological, psychiatric, bone and joint disorders, and immunological disorders
<b>Pharmacotherapy (4)</b> <b>(0204433)</b>	This course covers the epidemiology, etiology, pathophysiology, principles of non-pharmacological and drug treatment, evaluation of clinical trials, and drug monitoring of certain GIT and respiratory and endocrine diseases
<b>Patient Assessment &amp; Clinical Chemistry</b> <b>(0204440)</b>	This course covers the fundamentals of laboratory medicine and its importance in screening, diagnosis and evaluation of patient's clinical data relevant to state management, technique used for bio-analysis as hematology, serum levels of hormones, glucose, glycosylated hemoglobin, lipids, uric acid, electrolytes, minerals, urine analysis, and stool analysis and other biological fluids analysis and diagnostics.
<b>Pharmacy Practice and Pharmaceutical Care</b> <b>(0204450)</b>	This course includes an over view of pharmacy profession worldwide, issues of contemporary pharmacy on national and international levels, emerging and unique roles of the pharmacist as an active member in the health care team, concepts of pharmaceutical care, medication therapy, management services, patient- oriented pharmacy services , SOAP system for pharmaceutical care, with review of systems in details.
<b>Medication Information and Literature Evaluation</b> <b>(0204460)</b>	This course includes the pharmacist and drug information, fundamentals of the practice of drug information, types of literature with evaluation for each, application of drug information skills for the delivery of pharmaceutical care and pharmaceutical industry, understanding the practical implications of the literature, technology of drug information, and retrieval for quality assurance.
<b>Advanced Profess. Practice Experience (Hospital Pharmacy)</b> <b>(0204590)</b>	This advanced professional practice experience is carried out in hospitals for participation in hospital – care, ambulatory care and acute care. The students must participate in activities including pharmaceutical care, patients' pharmacotherapy, identifying and resolving drug-related problems, patients' education, applying and dealing with scientific publications, assessing patient's adherence, preparing and dispensing prescriptions, carry out patients' consultation, managing the medications use.
<b>Advanced Profess. Practice Experience (Clinical Pharmacy Training 1)</b> <b>(0204591)</b>	This advanced professional practice experience is carried out in hospitals for utilization of drug information, fundamentals of the practice of drug information, types of literature with evaluation for each, application of drug information skills for the delivery of pharmaceutical care and pharmaceutical industry, understanding the practical implications of the literature, technology of drug information, and retrieval for quality assurance.
<b>Advanced Profess. Practice Experience (Clinical Pharmacy Training 2)</b> <b>(0204592)</b>	This advanced professional practice experience is carried out in hospitals for participation in hospital – care, ambulatory care and acute care. The students must participate in activities including pharmaceutical care, patients' pharmacotherapy, identifying and resolving drug-related problems, patients' education.
<b>Industrial Pharmacy Experience</b> <b>(0204593)</b>	This comprises participation in activities of arrangement, and storage of raw materials and finished products, production of medications and quality control of raw materials and finished products in addition to GMP, quality assurance and ISO- systems. A special logbook designed for this course.