Badr University in Cairo

Faculty of Pharmacy

Courses Content

Bachelor of Pharmacy

(Clinical Pharmacy)

172 credit hours

The academic degrees awarded by Faculty of Pharmacy Badr University in Cairo are equivalent by the Egyptian Supreme Council of Universities Resolution No. 230 of 2019 with the same degrees awarded by the Egyptian universities subject to the Universities Organization Law No. 49 of 1972 and its executive regulations in the corresponding disciplines.

A) Department of Pharmaceutical Chemistry (PHC):

PHC1101 Physical Chemistry
Credit Hours: 2+1
Pre-requisite: None
Thermochemistry and thermodynamics, chemical kinetics, colloidal state and nuclear chemistry. Solutions, photochemistry and polymer chemistry.

PHC1202 Qualitative Analytical Chemistry
Credit Hours: 2+1
Pre-requisite: PHC1101
Introduction to inorganic reactions: law of mass action, common-ion effect, complexation reactions Anions: carbonate group, sulphur, halogen, nitrogen, cyanogen groups Cations: systemic classification of cations. Identification and separation of cations.

PHC2104 Quantitative Analytical Chemistry-1
Credit Hours: 2+1
Pre-requisite: PHC1202
Introduction to titremetric methods, standard solutions and standard substances. Acid-base titrations. pH and titration curves .Indicators. Applications. Titration in non-aqueous media and applications. Preciptimetric titrations, solubility product principle and titration curves, detection of the end-points and applications . Gravemetric analysis : purity of precipitate ,organic precipitants and precipitation from homogonous medium

PHC2206 Quantitative Analytical Chemistry-2
Credit Hours: 2+1
Pre-requisite: PHC2104
Complexometric titrations, types of bonds, chelation, stability of complexses, titration curves, metallochromic indicators, EDTA reactions and selectivity and applications, Redox Reactions, definitions, oxidation potential, titration curves, detection of the end point, Iodine/ iodide systems. Oxidants and reductants. Applications to drugs..

PHC1203 Organic Chemistry -1

Credit Hours: 2+1
Pre-requisite: None
Introduction to organic compounds, nomenculture, aliphatic hydrocarbons, organic reactions: substitution, addition, elimination and condensation. Halogenated hydrocarbons, alcohols, ethers, carbonyl compounds, carboxylic acids

PHC2105 Organic Chemistry-2
Credit Hours: 2+1
Pre-requisite: PHC1203
Chemistry of aromatic hydrocarbons, halogen and nitro compounds. Amines, diazonium salts and phenols, aromatic carboxylic acids, aldehydes, ketones, sulphonic acids and polynuclear aromatic hydrocarbons. Use of spectroscopy for structure elucidation of organic compounds : IR, NMR (1H,13C) and mass spectroscopy .Stereochemistry and stereoisomerization . Heterocyclic compounds: monocyclic monoheteroatom and fused bicyclic compounds .

PHC3107 Instrumental Analysis
Credit Hours: 2+1
Pre-requisite: PHC2206
Spectrophotometry (U.V, Visible) & Spectroflorimetric methods. Electrochemical Methods: Potentiometry, electrode potential and Nernest equation, Types of electrodes, reference electrodes, indicator electrodes, graphical detection of the end point, applications. Conductometry: ionic conductance and factors affecting it Conductance cell, direct conductometry and conductometric titrations.

PHC3208 Instrumental and Applied Analysis
Credit Hours: 2+1
Pre-requisite: PHC3107
Chromatography: planar chromatography (paper, TLC and electrophoresis) column chromatography, peak broadening and prevention, efficiency of the column, evaluation of chromatogram, instrumentation. Mechanisms of separation in HPLC. Gas Chromatography: GSC and GLC, instrumentation and applications of gas chromatography Analysis of waters, sampling, physical properties, chemical analysis, heavy metals, hardness, nitrate, nitrite and ammonia, oxygen dissolved, and oxygen absorbed. Analysis of oils and fats: physical properties,

chemical constants: acid value saponification value, iodine value, ester value, thiocyanogen value. Rancidity and peroxide value. Color tests of oils.

PHC4109 Pharmaceutical Chemistry- 1
Credit Hours: 2+1
Pre-requisite: PHC2105
Introduction to pharmaceutical chemistry, physiochemical properties of drugs in relation to pharmacological action. Synthetic antimicrobial agents , sulphonamids, and 4-quinolones antibacterials and antimalarial drugs.

PHC4210 Pharmaceutical Chemistry-2
Credit Hours: 2+1
Pre-requisite: PHC4109
Central nervous system drugs, anti-depressants, stimulants, major and minor tranqulizers, cardiovascular drugs: anti-hypertensive drugs, diuretics, analgesics and antipyretics,

PHC5111 Pharmaceutical Chemistry-3
Credit Hours: 2+1
Pre-requisite: PHC4210
Diagnostic agents, anesthetics, cancer chemotherapy, steroidal drugs and related compounds

B) Department of Pharmacognosy (PHG):

PHG1101 Introduction to Pharmacognosy & Medicinal Plants
Credit Hours: 2+1
Pre-requisite: None
A general introduction to pharmacognosy including definition, history of pharmacognosy. function of Pharmacognosist ,It also covers the binomial system of nomenclature and origin of medicinal plants, ,preparation,collection, drying , packing , storage and adultration of medicinal plants .Tissues structure and cell contents (Caox, starchs,aleron grains).Study of some leaves of medicinal importance (botanical source,morphology,histological demo, main secondary metabolites, uses and chemical tests)..

PHG2102 Pharmacognosy-1
Credit Hours: 2+1
Pre-requisite: PHG1101
Study of drugs obtained from barks, flowers, galls, woods, herbs and Study of drugs derived from Algae, fungi, lichens of potential medicinal uses. Histology and characterization of representative examples for each organ.

PHG2203 Pharmacognosy-2
Credit Hours: 2+1
Pre-requisite: PHG2102
Study of drugs derived from seeds, fruits, subterranean organs and un- organized drugs. Histology and characterization of representative examples for each organ.

PHG3104 Phytochemistry-1
Credit Hours: 2+1
Pre-requisite: PHG2203
This course will cover study of plant primary metabolites, natural drugs related to carbohydrates, glycosides and tannins .

PHG3205 Phytochemistry-2
Credit Hours: 2+1
Pre-requisite: PHG3104
This course is devoted to study chemistry of natural drugs, alkaloids, volatile oils, ridoids and lignans.

C) Department of Pharmaceutics and PharmaceuticalTechnology (PHT):

PHT1101 Pharmacy Orientation and History of Pharmacy
Credit Hours: 1+0
Pre-requisite: None
History of pharmacy practice, Arab impact role of the ancient pharmacists, pharmacy organization, systems of medicines, ethics of pharmacy profession. Introduction to different dosage forms. Types of prescriptions, pharmaceutical terminology.

PHT1102 Profession Ethics

Credit Hours: 1+0
Pre-requisite: None
The student should learn the basic knowledge of pharmaceutical care, patient care and medical team responsibilities .

PHT1203 Physical Pharmacy
Credit Hours: 2+1
Pre-requisite: PHC1101
Basics of physical pharmacy, rheology and flow of fluids. Surface tension and interfacial phenomenon. Solutions and their properties. Solubility and disperse systems.

PHT2104 Pharmaceutical Dosage Forms-1
Credit Hours: 2+1
Pre-requisite: PHT1203
This course will cover pharmaceutical solutions, coarse dispersions, suspensions and emulsions, powders, and granules

PHT2205 Pharmaceutical Dosage Forms-2
Credit Hours: 2+1
Pre-requisite: PHT2104
This course is devoted to tablets, capsules, semi-solid and related dosage forms, topical preparations, ointment and creams, suppositories, parenteral solutions and ophthalmic preparations.

PHT3106 Drug Delivery Systems
Credit Hours: 2+0
Pre-requisite: PHT2205
This course includes dosage forms, microencapsulation, liposomes, colonic drugs delivery systems, transdermal drug delivery systems and ophthalmic delivery systems.

PHT3207 Pharmacokinetics
Credit Hours: 2+0
Pre-requisite: PHT2205

The course deals with the principles of drug absorption and various factors affecting elimination and bioavailability of drugs. Pharmacokinetics models , pharmacokinetics following IV dosage forms , oral dosage forms ,kinetics of drug absorption ,clearance ,bioavailability ,bioequivalence , and correlation between in-vitro dissolution and in-vivo absorption

PHT3208 Hospital Pharmacy
Credit Hours: 2+0
Pre-requisite: PHT2205
Basis of hospital relationship, function of hospital pharmacy and its objectives. Organization of hospital pharmacy, Administration, educational and training divisions, surgical dressing and suture materials .Investigational drugs and therapeutic committee

PHT5109 Pharmacy Legislation
Credit Hours: 1+0
Pre-requisite: None
Study of the law that governs the practice of pharmacy, legal principles for controlled and non-controlled prescriptions, over the counter drug requirements, how to open new pharmacy, drug store, factory or scientific office. How to register a new drug product. Management of pharmacy or drug store. Pharmacist and responsibilities, pharmacist-patient relationship, ethical principles and moral rules.

MKT3201 Pharmaceutical Business Administration
Credit Hours: 1+0
Pre-requisite: None
This course will cover: Capital requirements purchasing and financing a new pharmacy, location analysis, pharmacy layout design, space management for pharmacy practice, inventory purchasing and control, over the counter merchandising, advertising, interpersonal communications, inter professional relations and patient consultation

MKT4102 Drug Marketing
Credit Hours: 1+0
Pre-requisite: None

Introduction to marketing, pharmaceutical marketing and the commodity marketing, the product development process in pharmaceutical marketing, developing a marketing plan, performing a needs analysis, big picture analysis, positioning statement and examples from the industry practices, simple forecasting formula. The budget elements of product, a communication plan. Marketing research: definition, objectives, types and methods. Recognizing trends, definition, types and recent trends of pharmaceutical marketing, ethical guidelines and regulations, pricing and reimbursement, discounts, bonuses, credit term.

D) Department of Microbiology and Immunology (MIM):

MIM2201 Microbiology-1
Credit Hours: 2+1
Pre-requisite: PHB1102
Classification and morphology of microorganisms. Bacterial growth and cell death, molecular basis of bacterial genetics, sterilization and sterility tests . Disinfection and preservation

MIM3102 Microbiology-2
Credit Hours: 2+1
Pre-requisite: MIM2201
Bacteriology, virology and mycology: morphology and characters, virulence factors, surface antigen, toxins and enzymes. Pathogenesis, chemical and laboratory diagnosis, prophylaxis, epidemiology, vaccination and treatment

MIM4103 Clinical Microbiology
Credit Hours: 2+0
Pre-requisite: MIM3102
The course covers: Bacteriology: gram positive, gram negative and mycobacterium group, Chlamydia and Rickettsia. Mycology: Ringworm, Moniliasis, Maduromycosis, Virology RNA and DNA viruses. Host-parasite relationship, Immunity: mechanism and protective immunity. Hypersensitivity and in-vitro antigen- antibody reactions. Autoimmunity and auto-immune diseases. Immune deficiency disorders .Transplantation and cancer immunology.

MIM4104 Parasitology and Pathology

Credit Hours: 2+1
Pre-requisite: MIM3102

Introduction and general pathology: Inflammation: classification, types and mechanism and treatmentsHealing: types, mechanisms, factors affecting repair, examples of repair, abscess and wounds. Cell response to injury, Necrosis, gangrene, bacterial infection, Tuberculosis, parasitic infections. Circulatory disturbances, disturbance of Growth, Tumors (neoplasia), Pathological terminology.

Diseases caused by Protozoa and their treatment; entamoeba, giardia, trichomonas, trypanosome, leishmania, plasmodium, toxoplasma, balantidium.

Role played by arthropods in transmission of parasitic diseases and treatments. Helminthic infections and their treatment.

MIM4205 Public Health
Credit Hours: 2+0
Pre-requisite: MIM4104

Basis of individual and population health by exploring health as an evolving and multidimensional concept. Historical and theoretical prospective are to be explored with a focus on chronic disease prevention , injury prevention , health promotion and health care . Water born and food born diseases

MIM5106 Immunology
Credit Hours: 2+0
Pre-requisite: MIM4104

Molecular and cellular immunology including antigen and antibody structure, function, and reaction between them, effector mechanism, complement and cell immediate immunity. Autoimmunity and vaccination.

E) Department of Pharmacology, Toxicology & Biochemistry (PHB):

PHB1101 English language
Credit Hours: 2+0
Pre-requisite: None

Training in reading, comprehension, basic grammatical rules, writing and translation. The course adopts a systematic approach to proper easy writing, such as idea development, paragraph structure, introductions and conclusions .

PHB1102 Cell Biology
Credit Hours: 2+1
Pre-requisite: None
The course is devoted to study the cell theory, membranous organelles, non-membranous organelles, the cell inclusions, the nucleus, cell growth and proliferation, apoptosis and cancer, apoptosis and AIDS, apoptosis and organ transplantation and cellular aging.

PHB1203 Medical Terminology
Credit Hours: 2+0
Pre-requisite: None
The student is taught and trained to use and understand medical and pharmaceutical terminologies, medical abbreviations, medical idioms, suffixes and prefixes.

PHB2104 Physiology-1
Credit Hours: 2+0
Pre-requisite: None
The course deals with the fundamentals of human physiology. The main topics include basic physiology of the nervous system, skeletal muscle and smooth muscle, the cardiovascular system, functions of the blood and immunity as well as hearing, equilibrium and the eye, practical applications and computer simulation programs.

PHB2205 Physiology-2
Credit Hours: 2+0
Pre-requisite: PHB2104
Physiology of the respiratory organs, the endocrine system, skin and tissues, reproductive organs, gastro-intestinal tract, the kidney, and the digestive tract.

PHB2206 Biochemistry-1
Credit Hours: 2+1
Pre-requisite: None
The course includes: Carbohydrates chemistry: polysaccharides and mucopolysaccharides. Lipid chemistry: fatty acids, triglercoides, phospholipids,

lipoproteins and cholesterol. Protein chemistry: amino acids , nutritional and biological value . Macro-proteins. Enzymes: mechanism of action and function. Vitamins classification, biological oxidation, oxidative stress and human disease.

PHB3107 Biochemistry-2
Credit Hours: 2+1
Pre-requisite: PHB2206
Metabolism of carbohydrates: digestion and absorption, Glycogen metabolism: storage and disease. Krebs cycle. Glyconeogenesis and blood glucose. Metabolism of lipids: digestion and metabolism, fatty acid synthesis, lipogenosis, Metabolism of phospholipids .Metabolism of proteins : protein turn-over , urea cycle , metabolism of ammonia. Chemical structure of nucleic acids RNA and DNA.

PHB3108 Pharmacology-1
Credit Hours: 2+1
Pre-requisite: PHB2205
General principles of pharmacology, pharmacokinetics, pharmacodynamics, receptor theory and drug interaction. Drugs acting on the autonomic nervous system, cardiovascular system, renal system and autacoids.

PHB3209 Pharmacology-2
Credit Hours: 2+1
Pre-requisite: PHB3108
The course covers the action of drugs affecting the central nervous system, gastrointestinal system. Blood and its forming elements. Chemotherapy of microbial diseases, neoplastic diseases and parasitic infestation, hormones and human autagonists.

PHB4110 Clinical Biochemistry
Credit Hours: 2+1
Pre-requisite: PHB3107
The course describes the analysis of blood and body fluid, tests for the functional state of the liver, kidney, heart, bone, gastrointestinal tract, endocrine glands and interpretation of the results in relation to health and diseases.

PHB4111 Toxicology & Forensic Toxicology
Credit Hours: 2+1
Pre-requisite: PHB3209
The course is devoted to study the principles, toxicity assessment, clinical, environmental, occupational, reproduction, genetic and heavy metal toxicity. Animal, plant and marine poisons. Toxicity of pesticides and radiation hazards. Immuno-toxicology, drug-induced toxicity and drug abuse.
Isolation and separation of biological materials (gases,steam volatile poisons, metalic poisons, non-volatile organic poisons). Blood stain: preliminary (guiacum, benzidine, kastle-meyer), confirmatory (microscope, spectro, reagents)

PHB4212 Drug Interaction
Credit Hours: 2+0
Pre-requisite: CLP4102
Study of mechanisms of drug interaction, significance of drug-drug interaction, management of drug-drug interaction. Drug interaction of antibiotics , antiarrythmics, anticoagulants , anticonvulsants , barbiturates , beta-agonists and antagonists , calcium channel blockers , sulphonamides , food-drug interaction , drug-smooking interaction and drug-environment interaction.

PHB4213 Therapeutics-1
Credit Hours: 2+0
Pre-requisite: CLP4102
Classification, symptoms and treatment of certain diseases: Obstetrics and gynaecology. Pediatrics, neonates and geriatrics, blood diseases, CNS diseases, renal diseases and cardiovascular diseases.

PHB4214 Bioassay and Biostatistics
Credit Hours: 2+1
Pre-requisite: PHB3209
Biological standardization of hormones, sera, vaccines, toxins, antitoxins, antibiotics and vitamins. The course also includes statistical concepts and analytical methods. Basic concepts of experimental design and, statistical inference.

PHB5115 Therapeutics-2
Credit Hours: 2+0
Pre-requisite: PHB4213
This course is a continuation of therapeutics 1. It includes the therapeutic concepts in the management of the disease states. Over the counter therapeutics (OTC), such as antacids, anti-diarrheas, hemorrhoids, analgesics, antipyretics, cold, flu, allergy, otic diseases, oral disorders, ophthalmic diseases, contact lens care, contraceptives, nutritional products, infant formula, diabetes care, dermatitis, foot care, weight loss and smoking aids.

PHB5216 First Aid
Credit Hours: 2+0
Pre-requisite: PHB2205
To learn the student how to follow the correct procedures in the emergency case of a risk or injured person. The skills and knowledge critical to saving life and minimizing the severity of injury as sudden illness. Safety awareness and accident prevention.

F) Department of Pharmacy Practice (CLP):

CLP3201 Clinical Pharmacy
Credit Hours: 2+0
Pre-requisite: PHT3106
Definitions, concepts, case history, patient management approach, patient history taking and clinical problem solving. Clinical drug interactions, adverse drug interactions, drug interference and clinical laboratory data.

CLP4102 Clinical Pharmacology
Credit Hours: 2+1
Pre-requisite: PHB3209
Principles of pharmacotherapy, Principles of pharmacotherapy in special patients, impact of drug interaction on therapeutics, pharmacotherapy for infectious diseases, cardiovascular disorders, respiratory disorders, gastrointestinal tract disorders, neurological and psychiatric disorders.

CLP4203 Clinical Pharmacokinetics

Credit Hours: 2+0
Pre-requisite: PHT3207
Applied clinical pharmacokinetics, mono and multi-exponential Pharmacokinetics, Non-compartmental pharmacokinetics and moment analysis. Drug distribution and drug clearance mechanisms. Intravenous infusion kinetics and kinetics following extra-vascular dosing, metabolite kinetics, multiple dose kinetics, non-linear Pharmacokinetics, dosing regimen design, dosage individualization of drugs of low therapeutic index

CLP5104 Oncology
Credit Hours: 2+1
Pre-requisite: CLP4102
The course will cover the cancer etiology, risk factors, prognosis, types of tumors, systems affected, treatment of cancer, adjuvant therapy, patient-factors and patient-support management.

CLP5105 Clinical nutrition
Credit Hours: 2+0
Pre-requisite: PHT3208
The study of kinds and amounts of macronutrients (carbohydrate, fats and proteins) and micronutrients (Vitamins and minerals) required to maintain optimal health condition and prevent chronic diseases in adults and children. The course also covers the electrolyte therapy and acid-base balance of body fluids

CLP5106 Gastroenterology
Credit Hours: 2+1
Pre-requisite: CLP4102
The course will focus on the diseases of the gastero-intestinal bract. Epidermiological aspects symptoms and their treatment. Patient advice and prepration of case reports.

CLP5207 Treatment of Dermatological and reproductive Diseases
Credit Hours: 2+1
Pre-requisite: MIM4103

Treatment of the most populer skin diseases. Differentiation between the different types, of skin diseases. Treatment of bacterial,viral and fungal diseases.Traetment of the common reproductive system diseases.

CLP5208 Treatment of Pediatric diseases
Credit Hours: 2+1
Pre-requisite: CLP4102
Nutritional disorders, neonatology, infectious diseases in pediatrics, congental heart diseases, endocrine diseases, neurological disorders and pediatric emergencies.

CLP5209 Treatment of cardiovascular diseases
Credit Hours: 2+1
Pre-requisite: CLP4102
The course covers the diseases of the cardiovascular systems, their symptoms and treatment and prognosis. Drug selection and dose control. Patient advice with hospital setting practice.

CLP5210 Treatment of respiratory system diseases
Credit Hours: 2+1
Pre-requisite: CLP4102
The course will focus on respiratory system infections and treatment. Occuptional and immunological diseases. Assessement of respiratory effeciency treatment. Oxygen Supply with Case study reports. professional. Clinical applications will be reviewed and discussed.

CLP5211 Drug Information
Credit Hours: 2+0
Pre-requisite: None
Drug and poison information centers, drug-drug interactions, drug-food interactions, drug-disease interactions, intravenous incompatibilities. Use of the Internet for drug and research information

CLP5212 Pharmacy Practice
Credit Hours: 2+0

Pre-requisite: PHB3209

This course deals with cases which handeled by a pharmacist in pharmacy & how manage them & instructions that should be provided to patients. The course cover respiratory disease, digestive disease, and eye & ear, skin, and other topics and practical application of these cases. The role of pharmacist in family and smoking cessation.

G) Medical Courses under The supervision of Pharmacology, Toxicology & Biochemistry Department (GMS)

GMS1101 Anatomy 1
Credit Hours: 2+0
Pre-requisite: None

Introduction, skeletal system, muscular system, articular system, fascia, cardiovascular system, lymphatic system, nervous system, cytology, blood, structure of liver, spleen, lungs, kidney, lymph nodes, cardiac muscles and stomach.

The course desgined to dicuss different symptoms and signs of common clinical cases related to the studied organs.

GMS1202 Anatomy 2
Credit Hours: 2+0
Pre-requisite: GMS1101

This course covers the digestive system, respiratory system, uro-genital system, endocrine glandns.

The course desgined to dicuss different symptoms and signs of common clinical cases related to the studied organs.

GMS1203 Histology
Credit Hours: 2+0
Pre-requisite: PHB1102

Cytology, various tissues (epithelial, connective, muscular and nervous), heart, blood vessels, lymphatic organs, skin and its appendages, systems (digestive and associated glands, respiratory, urinary, reproductive, central nervous system) endocrine glands and eyes.

H) University Requirements:

ECG1101 Human Rights
Credit Hours: 1+0
Pre-requisite: None
The aim of this course is to know the different information about human rights in Egypt including the human rights in Islamic law, civil rights, political rights, economic rights and social rights .

ECG1202 Scientific Thinking and Report writing
Credit Hours: 1+0
Pre-requisite: None
Principles of resonong relevant to the pursuit of the activity. It includes principles governing expermintal design, hypothesis testing, and the interpretation of data. The course learns the ability to correctly understand information, a situation or problem from different perspectives in order to suggest or take the best possible action

I) Training Requirements (STP):

STP3201 Summer training-1
Credit Hours: 0+2
Pre-requisite: None
SPT4202 Summer training-2
Credit Hours: 0+2
Pre-requisite: STP3201
The student must complete at least 300 hours (divided into 2 periods SPT-1 and SPT-2) of training in pharmacy settings such as community or hospital pharmacies, pharmaceutical firm or research institute. The student should learn how to communicate with patients, medical team and workers. The student should also learn how to manage, control and elesing the pharmaceutical dosage forms on shields, regulations of OTC and the applications of pharmacy practice.

J) University Elective Courses

ECU1 Psychology
Credit Hours: 1+0
Pre-requisite: None
This Course introduces the learner to topics such as learning, memory, sensation and perception, personality, life-span development, physiological basis of behavior, stress and health, and psychological disorder. Additional topics such as states of consciousness, psychotherapy, and other topics and issues, may also be included as determined by needs.

ECU2 Problem solving and decision making
Credit Hours: 1+0
Pre-requisite: None
Students study the general and fundamental problems, such as those connected with reality, existence, knowledge, values, reason, mind, and language. Philosophy is distinguished from other ways of addressing such problems by its critical, generally systematic approach and its reliance on rational argument. Philosophic thinking skills give student ways to arrive at better decisions and can help determine what matters most in any business challenge.

K) Faculty Elective Courses

ECP1 Food analysis
Credit Hours: 2+0
Pre-requisite: PHC2206
Introduction to food analysis, analysis of protease, kjeldahl method, analysis of oils and fats, analysis of carbohydrates, analysis of food additives coloring agents, preservatives, sweeting agents etc., genetically modified food.

ECP2 Therapeutic Drug Monitoring
Credit Hours: 2+0
Pre-requisite: PHB3209
Introduction, serum drug concentration, drug-protein binding, therapeutic drug monitoring of typical drug classes, such as antidepressants, benzo diazepines, antipsychotics, antiarrhythmics. Toxicological drug monitoring

ECP3 Advanced Immunology
Credit Hours: 2+0
Pre-requisite: MIM4104
Study Eakaryotic and prokaryotic cells, nomenculature of microorganisms, structure and form of the bacterial cells, sporea, mycoplasma and actinomycetes. Ricketts,viruses, eakaryotic microorganisms, bacterial genetics, molecular genetics, physiology of microorganisms, the growth curve of microbial metabolism.

ECP4 Drug Targeting
Credit Hours: 2+0
Pre-requisite: PHC3107
The course covers the fundamental concepts of drug receptor interaction and the different sites of drug action, including enzymes and nucleic acids. Different methods used to increase drug specify and delivery of drugs to specific target sites. Application to describe the different types of drug action inside different classes will be studied.

ECP5 Pharmaceutical nanotechnology
Credit Hours: 2+0
Pre-requisite: PHT2206
Introduction to nanotechnology, Nano-disperse systems including nano-emulsions and nanoparticles, nano- crystals and polymeric nano-particles preparations and their application. Nano-metals: silver, gold, carbon and nano-tube preparations and their applications.

ECP6 Nutraceuticals
Credit Hours: 2+0
Pre-requisite: PHG3205
This Cource will describe functional foods and nutraceuticals, including their health benfits, development, and regulation. It will discuss chemistry and physiological effects of functional foods specially antioxidants, dietary fibers, prebiotics and probiotics, beside vitamins and dietary supplements (macro and micronutrients). By the end of this course the student should be able to define funcational foods and nutraceuticals.

ECP7 Complementary and Alternative Medicine
Credit Hours: 2+0
Pre-requisite: PHG3205
Our Study will be conducted in context of a scientific review of recent evidence-based on effectiveness and mechanism of action for various therapeutic modalities. Our course will deal with introduction to complementary and alternative medicine, systems of health care, Traditional Chinese Medicine and Ayurvedia, Homeopathy, naturopathy, hydrotherapy and aromatherapy, nutraceuticals and survey on OTC-drugs.

ECP8 Drug Abuse
Credit Hours: 2+0
Pre-requisite: PHB3209
This Course deals with miss use of drug dependence and drug induced disease, the rational and irrational use of drugs.

ECP9 Pharmacovigilance
Credit Hours: 2+0
Pre-requisite: CLP3201
This course is designed to provide Pharmacy students with a comprehensive and intensive overview of the methodology used in the development and implementation of patient-specific therapeutic treatment plans. The course is also designed to improve clinical
problem–solving skills of the students. Patient care requires critical analysis of drug therapy and monitoring to assure optimal drug efficacy and safety in conjunction with cost-effectiveness and manage reporting adverse effect of drugs.

ECP10 Pharmacoeconomics & Pharmacoepidemiology
Credit Hours: 2+0
Pre-requisite: CLP3201
The course deals with the study of the use of drugs and their effects in large number of the population. The course involves the incidence and total cost of disease, economic impact and aspects of drug therapy, cost/benefit assessment, public health systems, health insurance, tax-based systems.

Badr University in Cairo

Faculty of Pharmacy

Courses Content

Bachelor of Pharmacy

(Drug Manufacturing)

169 credit hours

The academic degrees awarded by Faculty of Pharmacy Badr University in Cairo are equivalent by the Egyptian Supreme Council of Universities Resolution No. 230 of 2019 with the same degrees awarded by the Egyptian universities subject to the Universities Organization Law No. 49 of 1972 and its executive regulations in the corresponding disciplines.

A) Department of Pharmaceutical Chemistry (PHC):

PHC1101 Physical Chemistry
Credit Hours: 2+1
Pre-requisite: None
Thermochemistry and thermodynamics, chemical kinetics, colloidal state and nuclear chemistry. Solutions, photochemistry and polymer chemistry.

PHC1202 Qualitative Analytical Chemistry
Credit Hours: 2+1
Pre-requisite: None
Introduction to inorganic reactions: law of mass action, common-ion effect, complexation reactions Anions: carbonate group, sulphur, halogen, nitrogen, cyanogen groups Cations: systemic classification of cations.Identification and separation of cations.

PHC1203 Organic Chemistry -1
Credit Hours: 2+1
Pre-requisite: PHC1101
Introduction to organic compounds, nomenculture, aliphatic hydrocarbons, organic reactions: substitution, addition, elimination and condensation.Halogenated hydrocarbons, alcohols,ethers,carbonyl compounds,carboxylic acids

PHC2104 Quantitative Analytical Chemistry-1
Credit Hours: 2+1
Pre-requisite: PHC1202
Introduction to titremetric methods, standard solutions and standard substances. Acid-base titrations. pH and titration curves. Indicators. Applications. Titration in non-aqueous media and applications. Preciptimetric titrations, solubility product principle and titration curves, detection of the endpoints and applications. Gravemetric analysis: purity of precipitate, organic precipitants and precipitation from homogonous medium

PHC2105 Organic Chemistry-2
Credit Hours: 2+1

Pre-requisite: PHC1203

Chemistry of aromatic hydrocarbons, halogen and nitro compounds. Amines, diazonium salts and phenols, aromatic carboxylic acids, aldehydes, ketones, sulphonic acids and polynuclear aromatic hydrocarbons

PHC2206 Quantitative Analytical Chemistry-2

Credit Hours: 2+1

Pre-requisite: PHC2104

Complexometric titrations, types of bonds, chelation, stability of complexses, titration curves, metallochromic indicators, EDTA reactions and selectivity and applications, Redox Reactions, definitions, oxidation potential, titration curves, detection of the end point, Iodine/ iodide systems. Oxidants and reductants. Applications to drugs.

PHC2207 Organic Chemistry-3

Credit Hours: 2+1

Pre-requisite: PHC2105

Use of spectroscopy for structure elucidation of organic compounds: IR, NMR (1H,13C) and mass spectroscopy .Stereochemistry and stereoisomerization . Heterocyclic compounds: monocyclic monoheteroatom and fused bicyclic compounds .

PHC3108 Instrumental Analysis

Credit Hours: 2+1

Pre-requisite: PHC2206

Spectrophotometry (U.V, Visible) & Spectroflorimetric methods. Electrochemical Methods: Potentiometry, electrode potential and Nernest equation, Types of electrodes, reference electrodes, indicator electrodes, graphical detection of the end point, applications. Conductometry: ionic conductance and factors affecting it Conductance cell, direct conductometry and conductometric titrations.

PHC3209 Instrumental and Applied Analysis

Credit Hours: 2+1

Pre-requisite: PHC3108

Chromatography: planar chromatography (paper, TLC and electrophoresis) column chromatography, peak broadening and prevention, efficiency of the column, evaluation of chromatogram, instrumentation. Mechanisms of separation in HPLC. Gas Chromatography: GSC and GLC, instrumentation and applications of gas chromatopography. Analysis of waters, sampling, physical properties, chemical analysis, heavy metals, hardness, nitrate, nitrite and ammonia, oxygen dissolved and oxygen absorbed. Analysis of oils and fats: physical properties, chemical constants: acid value saponification value, iodine value, ester value,thiocyanogen value. Rancidity and peroxide value. Color tests of oils.

PHC4110 Pharmaceutical Analytical Chemistry
Credit Hours: 2+1
Pre-requisite: PHC3209
Analysis of dosage forms such tablets, capsules, syrups, ampules, creams, ointment etc. Official methods of analysis, limit tests, content uniformity tests and purity tests of drugs .

PHC4111 Pharmaceutical Chemistry- 1
Credit Hours: 2+1
Pre-requisite: PHC2207
Introduction to pharmaceutical chemistry, physiochemical properties of drugs in relation to pharmacological action. Synthetic antimicrobial agents, sulphonamids, and 4-quinolones antibacterials and antimalarial drugs.

PHC4212 Pharmaceutical Chemistry-2
Credit Hours: 2+1
Pre-requisite: PHC4111
Central nervous system drugs, anti-depressants , stimulants, major and minor tranqulizers, cardiovascular drugs: anti-hypertensive drugs,diuretics, analgesics and antipyretics,

PHC5113 Pharmaceutical Chemistry-3
Credit Hours: 2+1
Pre-requisite: PHC4212

Diagnostic agents, anaesthetics , cancer chemotherapy , steroidal drugs and related compounds

PHC5114 Drug Design
Credit Hours: 2+0
Pre-requisite: PHC4212
Structure activity relationship, quantum mechanics, molecular connectivity, pharmacophore generation and molecular modification by isosteric replacement. Natural products leading to new pharmaceuticals, mathmatical treatment leading to prediction of activity, defining sites and targets, molecular modelling , pro drug and drug latentination

PHC5215 Drug Quality Control
Credit Hours: 2+1
Pre-requisite: PHC4110
Definitions and terms, quality control report, total quality management , impurities and their limits and classification. Minimum requirements for different dosage forms. Comperdial methods of analysis. Sampling, procedures and criteria. Documentation, types and protocols. Validation of analytical methods and stability-indicating methods of assay

B) Department of Pharmacognosy (PHG):

PHG1101 Introduction to Pharmacognosy & Medicinal Plants
Credit Hours: 2+1
Pre-requisite: None
A general introduction to pharmacognosy including definition, history of pharmacognosy. function of Pharmacognosist ,It also covers the binomial system of nomenclature and origin of medicinal plants, ,preparation,collection, drying , packing , storage and adultration of medicinal plants .Tissues structure and cell contents (Ca.ox., starchs,aleron grains).Study of some leaves of medicinal importance (botanical source,morphology,histological demo, main secondary metabolites, uses and chemical tests)..

PHG2102 Pharmacognosy-1

Credit Hours: 2+1
Pre-requisite: PHG1101
Study of drugs obtained from, flowers, seeds and fruits of potential medicinal uses. Histology and characterization of representative examples for each organ.

PHG2203 Pharmacognosy-2
Credit Hours: 2+1
Pre-requisite: PHG1101
Study of drugs derived from barks, galls, woods, herbs, subterranean organs and un- organized drugs of potential medicinal uses. Histology and characterization of representative examples for each organ.

PHG3104 Phytochemistry-1
Credit Hours: 2+1
Pre-requisite: PHG2203
This course will cover study of plant primary metabolites, natural drugs related to carbohydrates, glycosides and tannins .

PHG3205 Phytochemistry-2
Credit Hours: 2+1
Pre-requisite: PHG3104
This course is devoted to study chemistry of natural drugs, alkaloids, volatile oils, iridoids and lignans.

C) Department of Pharmaceutics and Pharmaceutical Technology (PHT):

PHT1101 Pharmacy Orientation and History of Pharmacy
Credit Hours: 1+0
Pre-requisite: None
History of pharmacy practice, Arab impact role of the ancient pharmacists, pharmacy organization, systems of medicines, ethics of pharmacy profession. Introduction to different dosage forms. Types of prescriptions, pharmaceutical terminology

PHT1102 Profession Ethics

Credit Hours: 1+0
Pre-requisite: None
The student should learn the basic knowledge of pharmaceutical care, patient care and medical team responsibilities .

PHT1203 Physical Pharmacy
Credit Hours: 2+1
Pre-requisite: PHC1101
Basics of physical pharmacy, rheology and flow of fluids. Surface tension and interfacial phenomenon. Solutions and their properties. Solubility and disperse systems.

PHT2104 Pharmaceutical Dosage Forms-1
Credit Hours: 2+1
Pre-requisite: PHT1203
This course will cover: pharmaceutical solutions, coarse dispersions, suspensions and emulsions, powders and granules

PHT 2205 Pharmaceutical Dosage Forms-2
Credit Hours: 2+1
Pre-requisite: PHT2104
This course is devoted to tablets, capsules, semi-solid and related dosage forms, topical preparations, ointment and creams, suppositories, parenteral solutions and ophthalmic preparations.

PHT2206 Drug Delivery Systems
Credit Hours: 2+0
Pre-requisite: PHT2104
This course includes dosage forms, microencapsulation, liposomes, colonic drugs delivery systems, transdermal drug delivery systems and ophthalmic delivery systems.

PHT3107 Pharmacokinetics
Credit Hours: 2+1

Pre-requisite: PHT2205

The course deals with the principles of drug absorption and various factors affecting elimination and bioavailability of drugs. Pharmacokinetics models, pharmacokinetics following IV dosage forms , oral dosage forms ,kinetics of drug absorption ,clearance ,bioavailability ,bioequivalence , and correlation between in-vitro dissolution and in-vivo absorption

PHT4108 Industrial Pharmacy-1

Credit Hours: 2+1

Pre-requisite: PHT2205

This course is devoted to: Heat transfer theory, source, mechanism and equipment. Drying: theory, rate and equipment. Mixing: liquid, solid and semi-solid mixing, mixer selection and equipment. Emulsification and homogenization, Crystallization: theory and equipment. Filtration and centrifugation: theory and equipment

PHT4209 Industrial Pharmacy-2

Credit Hours: 2+1

Pre-requisite: PHT4108

This course covers: size separation and size reduction: mechanism and equipment. Size enlargement: granulation and equipment. Size analysis: mechanism, theory, factors affecting size analysis. Mixing, emulsification and homogenization

PHT5110 Quality Assurance

Credit Hours: 2+0

Pre-requisite: PHT4209

Quality control and assurance organization, analytical control units, inspection control , documentation , environmental control , good manufacturing practice regulations and statistical quality control

PHT5211 Pharmacy Legislation

Credit Hours: 1+0

Pre-requisite: None

Study of the law that governs the practice of pharmacy, legal principles for controlled and non-controlled prescriptions, over the counter drug requirements, how to open new pharmacy, drug store, factory or scientific office. How to register a new drug product. Management of pharmacy or drug store. Pharmacist and responsibilities, pharmacist-patient relationship, ethical principles and moral rules.

PHT5212 Hospital Pharmacy
Credit Hours: 2+0
Pre-requisite: CLP5103
Basis of hospital relationship, function of hospital pharmacy and its objectives. Organization of hospital pharmacy, Administration, educational and training divisions, surgical dressing and suture materials. Investigational drugs and therapeutic committee

MKT5101 Pharmaceutical Business Administration
Credit Hours: 1+0
Pre-requisite: None
This course will cover: Capital requirements purchasing and financing a new pharmacy, location analysis, pharmacy layout design, space management for pharmacy practice, inventory purchasing and control, over the counter merchandising, advertising, interpersonal communications, inter professional relations and patient consultation

MKT5202 Drug Marketing
Credit Hours: 2+0
Pre-requisite: None
Introduction to marketing, pharmaceutical marketing and the commodity marketing, the product development process in pharmaceutical marketing, developing a marketing plan, performing a needs analysis, big picture analysis, positioning statement and examples from the industry practices, simple forecasting formula. The budget elements of product, a communication plan. Marketing research: definition, objectives, types and methods. Recognizing trends, definition, types and recent trends of pharmaceutical marketing, ethical guidelines and regulations, pricing and reimbursement, discounts, bonuses, credit term.

D) Department of Microbiology and Immunology (MIM):

MIM3101 Microbiology-1
Credit Hours: 2+1
Pre-requisite: PHB1102
Classification and morphology of microorganisms. Bacterial growth and cell death, molecular basis of bacterial genetics, sterilization and sterility tests . Disinfection and preservation

MIM3202 Microbiology-2
Credit Hours: 2+1
Pre-requisite: MIM3101
Bacteriology, virology and mycology: morphology and characters, virulence factors, surface antigen, toxins and enzymes. Pathogenesis, chemical and laboratory diagnosis, prophylaxis, epidemiology, vaccination and treatment

MIM4103 Clinical Microbiology
Credit Hours: 2+0
Pre-requisite: MIM3202
The course covers: Bacteriology: gram positive, gram negative and mycobacterium group, Chlamydia and Rickettsia. Mycology: Ringworm, Moniliasis, Maduromycosis, Virology RNA
and DNA viruses. Host-parasite relationship, Immunity: mechanism and protective immunity. Hypersensitivity and in-vitro antigen- antibody reactions. Autoimmunity and auto-immune diseases. Immune deficiency disorders. Transplantation and cancer immunology.

MIM4104 Microbial Biotechnology
Credit Hours: 2+0
Pre-requisite: MIM3202
This course will cover biology of industrial microorganisms, biophysical and biochemical processes. Introduction to tissue culture and genetic engineering techniques for improving the economically important plants and animals and for the developments of microorganisms to act on the environment. Manipulation of living organisms, specially at the molecular genetic level to produce new products

such as hormons , vaccines or monoclonal antibiotics , production of pharmaceuticals by microorganisms and gene therapy.

MIM5105 Parasitology
Credit Hours: 2+1
Pre-requisite: MIM3203
Classical and modern parasitology concentrating on protozoan and worm parasites of major medical or veterinary importance. Principles of parasitology, life cycles, epidemiology, host-parasite interactions.

MIM5106 Immunology
Credit Hours: 2+0
Pre-requisite: MIM3203
Molecular and cellular immunology including antigen and antibody structure, function, and reaction between them, effector mechanism, complement and cell immediate immunity . Autoimmunity and vaccination.

MIM5207 Public Health
Credit Hours: 2+0
Pre-requisite: MIM5106
Basis of individual and population health by exploring health as an evolving and multidimensional concept. Historical and theoretical prospective are to be explored with a focus on chronic disease prevention, injury prevention, health promotion and health care. Water born and food born diseases

E) Department of Pharmacology, Toxicology & Biochemistry (PHB):

PHB1101 English language
Credit Hours: 2+0
Pre-requisite: None
Training in reading, comprehension, basic grammatical rules, writing and translation. The course adopts a systematic approach to proper easy writing, such as idea development, paragraph structure, introductions and conclusions .

PHB1102 Cell Biology

Credit Hours: 2+1
Pre-requisite: None
The course is devoted to study the cell theory, membranous organelles , non-membranous organelles , the cell inclusions , the nucleus , cell growth and proliferation , apoptosis and cancer , apoptosis and AIDS , apoptosis and organ transplantation and cellular aging.

PHB1203 Medical Terminology
Credit Hours: 2+0
Pre-requisite: None
The student taught to use and understand pharmaceutical and medical terms, medical abbreviations, medical idioms, suffixes and prefixes.

PHB2104 Physiology
Credit Hours: 2+0
Pre-requisite: None
The course includes study of the body: water, homeostasis, transport of materials. Nervous system: autonomic nervous system, neuron structure and function (reflex arc).Cardiovascular system, blood, respiratory cycle , gastrointestinal system, reproduction system , neural system and endocrine glands.

PHB2105 Biochemistry-1
Credit Hours: 2+1
Pre-requisite: None
The course includes:importance of biochemistry, Carbohydrates chemistry: polysaccharides and mucopolysaccharides. Lipid chemistry: fatty acids, triglycerides, phospholipids, lipoproteins and cholesterol. Protein chemistry: amino acids , nutritional and biological value . Macro-proteins. Enzymes: mechanism of action and function. Vitamins classification, biological oxidation, oxidative stress and human disease.

PHB2206 Biochemistry-2
Credit Hours: 2+1
Pre-requisite: PHB2105

Metabolism of carbohydrates: digestion and absorption, Glycogen metabolism: storage and disease. Krebs cycle. Glyconeogenesis and blood glucose. Metabolism of lipids: digestion and metabolism, fatty acid synthesis, lipogenosis, Metabolism of phospholipids .Metabolism of proteins : protein turn-over , urea cycle , metabolism of ammonia. Chemical structure of nucleic acids RNA and DNA.

PHB3107 Pharmacology-1
Credit Hours: 2+1
Pre-requisite: PHB2104
General principles of pharmacology, pharmacokinetics, pharmacodynamics, receptor theory and drug interaction. Drugs acting on the autonomic nervous system, cardiovascular system, renal system and autacoids.

PHB 3208 Pharmacology-2
Credit Hours: 2+1
Pre-requisite: PHB3107
The course covers the action of drugs affecting the central nervous system , gastrointestinal system . Blood and its forming elements. Chemotherapy of microbial diseases, neoplastic diseases and parasitic infestation, hormones and human autagonists.

PHB3209 Clinical Biochemistry
Credit Hours: 2+1
Pre-requisite: PHB2206
The course describes the analysis of blood and body fluid, tests for the functional state of the liver, kidney, heart, bone, gastrointestinal tract, endocrine glands and interpretation of the results in relation to health and diseases.

PHB4110 Bioassay and Biostatistics
Credit Hours: 2+1
Pre-requisite: PHB3208
Biological standardization of hormones, sera, vaccines, toxins, antitoxins, antibiotics and vitamins. The course also includes statistical concepts and

analytical methods. Basic concepts of experimental design and, statistical inference.

PHB4211 Toxicology & Forensic Toxicology
Credit Hours: 2+1
Pre-requisite: PHB3208
The course is devoted to study the principles, toxicity assessment, clinical, environmental, occupational, reproduction, genetic and heavy metal toxicity. Animal, plant and marine poisons. Toxicity of pesticides and radiation hazards. Immuno-toxicology, drug-induced toxicity and drug abuse.
Isolation and separation of biological materials (gases,steam volatile poisons, metalic poisons, non-volatile organic poisons). Blood stain: preliminary (guiacum, benzidine, kastle-meyer), confirmatory (microscope, spectro, reagents)

PHB5112 Therapeutics-1
Credit Hours: 2+0
Pre-requisite: CLP4202
Classification, symptoms and treatment of certain diseases: Obstetrics and gynaecology. Pediatrics, neonates and geriatrics, blood diseases, CNS diseases, renal diseases and cardiovascular diseases.

PHB5213 Therapeutics-2
Credit Hours: 2+0
Pre-requisite: PHB5112
This course is a continuation of therapeutics-1. It includes the therapeutic concepts in the management of the disease states. Over the counter therapeutics (OTC), such as antacids, anti-diarrheas, hemorrhoids, analgesics, antipyretics, cold, flu, allergy, otic diseases, oral disorders, ophthalmic diseases, contact lens care, contraceptives, nutritional products, infant formula, diabetes care, dermatitis, foot care, weight loss and smoking aids

PHB5214 Drug Interaction
Credit Hours: 2+0
Pre-requisite: PHB3208

Study of mechanisms of drug interaction, significance of drug-drug interaction, management of drug-drug interaction. Drug interaction of antibiotics , antiarrythmics, anticoagulants , anticonvulsants , barbiturates , beta-agonists and antagonists , calcium channel blockers , sulphonamides , food-drug interaction , drug-smooking interaction and drug-environment interaction.

F) Department of Pharmacy Practice (CLP):

CLP4201 Clinical Pharmacokinetics
Credit Hours: 2+1
Pre-requisite: PHT3107
Applied clinical pharmacokinetics, mono and multi-exponential Pharmacokinetics, Non-compartmental pharmacokinetics and moment analysis .Drug distribution and drug clearance mechanisms. Intravenous infusion kinetics and kinetics following extra-vascular dosing, metabolite kinetics, multiple dose kinetics, non-linear Pharmacokinetics, dosing regimen design, dosage individualization of drugs of low therapeutic index

CLP4202 Clinical Pharmacology
Credit Hours: 2+0
Pre-requisite: PHB4110
Principles of pharmacotherapy, Principles of pharmacotherapy in special patients, impact of drug interaction on therapeutics, pharmacotherapy for infectious diseases, cardiovascular disorders, respiratory disorders, gastrointestinal tract disorders, neurological and psychiatric disorders.

CLP5103 Clinical Pharmacy
Credit Hours: 2+0
Pre-requisite: CLP4202
Definitions, concepts, case history, patient management approach, patient history taking and clinical problem solving. Clinical drug interactions, adverse drug interactions, drug interference and clinical laboratory data.

CLP5204 Drug Information
Credit Hours: 1+0

Pre-requisite: None

Drug and poison information centers, drug-drug interactions, drug-food interactions, drug-disease interactions, intravenous incompatibilities. Use of the Internet for drug and research information.

G) Medical Courses under The supervision of Pharmacology, Toxicology & Biochemistry Department (GMS):

GMS1101 Anatomy
Credit Hours: 2+0
Pre-requisite: None

Introduction, skeletal system, muscular system, articular system, fascia, cardiovascular system, lymphatic system, nervous system, digestive system, respiratory system, uro-genital system, endocrine glands, cytology, blood, structure of liver, spleen, lungs, kidney, lymph nodes, cardiac muscles and stomach.

GMS1202 Histology
Credit Hours: 2+0
Pre-requisite: PHB1102

Cytology , various tissues (epithelial , connective ,muscular and nervous), heart, blood vessels, lymphatic organs, skin and its appendages, systems (digestive and associated glands, respiratory, urinary, reproductive, central nervous system) endocrine glands and eyes

GMS5203 First Aid
Credit Hours: 1+0
Pre-requisite: None

To learn the student how to follow the correct procedures in the emergency case of a risk or injured person. The skills and knowledge critical to saving life and minimizing the severity of injury as sudden illness. Safety awareness and accident prevention.

H) University Requirements (ECG):

ECG1101 Human Rights
Credit Hours: 1+0
Pre-requisite: None
The aim of this course is to know the different information about human rights in Egypt including the human rights in Islamic law, civil rights, political rights, economic rights and social rights .

ECG1202 Scientific Thinking and Report Presentation
Credit Hours: 1+0
Pre-requisite: None
Principles of resonong relevant to the pursuit of the activity. It includes principles governing expermintal design, hypothesis testing, and the interpretation of data. The course learn the ability to understand correctly information, a situation or problem from different perspectives in order to suggest or take the best possible action.

H) Training Requirements (STP):

STP3201 Summer training-1
Credit Hours: 0+2
Pre-requisite: None
STP4202 Summer training-2
Credit Hours: 0+2
Pre-requisite: None
The student must complete at least 300 hours (divided into 2 periods SPT-1 and SPT-2) of training in pharmacy settings such as community or hospital pharmacies, pharmaceutical firm or research institute. The student should learn how to communicate with patients, medical team and workers. The student should also learn how to manage, control and elesing the pharmaceutical dosage forms on shields, regulations of OTC and the applications of pharmacy practice.

J) University Elective Courses (ECU):

ECU1 Psychology
Credit Hours: 1+0
Pre-requisite: None
This Course introduces the learner to topics such as learning, memory, sensation and perception, personality, life-span development, physiological basis of behavior, stress and health, and psychological disorder. Additional topics such as states of consciousness, psychotherapy, and other topics and issues, may also be included as determined by needs.

ECU2 Problem solving and decision making
Credit Hours: 1+0
Pre-requisite: None
Students study the general and fundamental problems, such as those connected with reality, existence, knowledge, values, reason, mind, and language. Philosophy is distinguished from other ways of addressing such problems by its critical, generally systematic approach and its reliance on rational argument. Philosophic thinking skills give student ways to arrive at better decisions and can help determine what matters most in any business challenge.

K) Faculty Elective Courses (EDM)

EDM1 Food analysis
Credit Hours: 2+0
Pre-requisite: PHC2206
Introduction to food analysis, analysis of protease, kjeldahl method, analysis of oils and fats, analysis of carbohydrates, analysis of food additives coloring agents, preservatives, sweeting agents..etc., genetically modified food.

EDM2 Therapeutic Drug Monitoring
Credit Hours: 2+0
Pre-requisite: PHB3208
Introduction, serum drug concentration, drug-protein binding, therapeutic drug monitoring of typical drug classes, such as ; antidepressants, benzo diazepines, antipsychotics, antiarrhythmics. Toxicological drug monitoring

EDM3 Advanced Immunology
Credit Hours: 2+0
Pre-requisite: MIM3202
Study Eakaryotic and prokaryotic cells, nomenculature of microorganisms, structure and form of the bacterial cells, sporea, mycoplasma and actinomycetes. Ricketts,viruses, eakaryotic microorganisms, bacterial genetics, molecular genetics, physiology of microorganisms, the growth curve of microbial metabolism.

EDM4 Polymer Chemistry
Credit Hours: 2+0
Pre-requisite: PHC2206
Study of polymer reactions, addition and condensation. Thermoplastics, Thermosets and natural polymers. Viscosity of polymers. Mechanical strength of polymers. Application of polymers in pharmaceutical industries.

EDM5 Drug Targeting
Credit Hours: 2+0
Pre-requisite: PHT2206
The course covers the fundamental concepts of drug receptor interaction and the different sites of drug action, including enzymes and nucleic acids. Different methods used to increase drug specify and delivery of drugs to specific target sites. Application to describe the different types of drug action inside different classes will be studied.

EDM6 Cosmetic Preparations
Credit Hours: 2+0
Pre-requisite: PHT2205
Definitions and classification of cosmetics. Anti-dandroff preparations, fragrance preparations, nail lacquers, skin care products (emollient and tanning) antiperspirants and deodorants, shampoo, dentifrices preparations, eye, makeup preparations, acne preparations, hair dyes, rouge, lipstick preparations. Quality-control and evaluation of cosmotics.

EDM7 Pharmaceutical nanotechnology

Credit Hours: 2+0
Pre-requisite: PHT2205
Introduction to nanotechnology, Nano-disperse systems including nano-emulsions and nanoparticles, nano- crystals and polymeric nano-particles preparations and their application. Nano-metals: silver, gold, carbon and nano-tube preparations and their applications.

EDM8 Production & Manufacture of Natural Products
Credit Hours: 2+0
Pre-requisite: PHG3205
The course discuses the different factors that affect the production of medicinal plants and their constituents as methods of cultivation, effect of ecology, soil and plant hormones on their growth, methods of collection, drying and storage. The course covers also the modern methods for production of active constituents from natural sources by tissue culture technique. Meanwhile the course points to the marine plants and their medicinal potency together with methods of preparation of plant extracts and galenicals.

EDM9 Phytotherapy
Credit Hours: 2+0
Pre-requisite: PHG3205
This course includes the use of herbal medicines for treatment of different types of diseases, their effects on different body systems, safety and dosage form of herbs used. The course also includes the quality control and required specifications for herbal medicine according to that specified in different Pharmacopoeias and WHO.