



| Fourth stage | | |
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| 1 st semester | Lecture title | hours |
| Title of the course: Pharmacology II Course number: 411 Level: 4 th Class, 1 st Semester Credit hours/week: Theory 3 Laboratory 1 Reference text: Lipincott Pharmacology 3rd Edition, 2006 Objectives: To introduce the pharmacy students to the general pharmacology of the central nervous system and to the various drug groups used in the treatment of CNS diseases or drugs altering its function. The student will be introduced to the various drugs used in the management of cardiovascular diseases. Moreover the course will cover the drugs affecting the gastrointestinal and respiratory systems. | | |
| Pharmacology II | Introduction to CNS pharmacology. | 2 |
| | CNS stimulants. | 2 |
| | Anxiolytic and Hypnotic drugs. | 3 |
| | General and Local Anesthetics. | 3 |
| | Antidepressant drugs. | 3 |
| | Antipsychotic (neuroleptic) drugs. | 3 |
| | Opioid analgesics and antagonists. | 3 |
| | Treatment of neurodegenerative diseases. | 3 |
| | Antiepileptic Drugs. | 2 |
| | Diuretics. | 2 |
| | The treatment of heart failure (HF). | 2 |
| | Antiarrhythmic drugs. | 2 |
| | Antianginal Drugs. | 2 |
| | Antihypertensive drugs. | 3 |
| | Drugs affecting the blood. | 3 |
| | Antihyperlipidemic drugs. | 2 |
| | Gastrointestinal and antiemetic drugs. | 2 |
| Drugs acting on the respiratory system. | 3 | |



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| <p>Title of the course: Organic Pharmaceutical Chemistry II Course number: 412 Level: 4th Class, 1st Semester Credit hours/week : Theory 3 Laboratory 1 Reference text: <i>Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceutical Chemistry; Delgado JN, Remers WA, (Eds.); 10th ed., 2004.</i> discovery and development of new agents for The course is devoted to the :Objectives translating the drug structural formula into therapeutic treating diseases, and enables pharmaceutical Additionally, it focuses on the methods of preparation for some effect. agents.</p> | | |
| organic pharmaceutical chemistry II | Cholinergic agents, cholinergic receptors and their subtypes. | 3 |
| | Cholinergic agonists; stereochemistry and structure-activity relationships (SAR); products; cholinesterase inhibitors. | 5 |
| | Cholinergic blocking agent; structure-activity relationships (SAR); Solanaceous alkaloid and analogues; synthetic cholinergic blocking agents and products; ganglionic blocking agents (neuromuscular blocking agents). | 5 |
| | Analgesic agents (SAR of morphine, SAR of meperidine type molecules; SAR of methadone type compounds; N-methylbezomorphans, antagonist type analgesics in benzomorphans). | 5 |
| | Analgesic receptors, endogenous opioids; Products; Antitusive agents; Anti-inflammatory analgesics. | 5 |
| | Adrenergic agents (Adrenergic neurotransmitters); Adrenergic receptors; Drugs affecting Adrenergic neurotransmission; Sympathomimetic agents; Adrenergic receptor antagonists. | 8 |
| | CNS depressant; Benzodiazepines and related compounds; Barbiturates; CNS depressant with skeletal muscle relaxant properties; Antipsycotics; Anticonvulsants. | 7 |
| | CNS Stimulants | 3 |
| | Steroidal & nonsteroidal hormones | 4 |
| <p>Title of the course: Clinical Pharmacy I Level: 4th Class, 1st Semester Credit hours/week : Theory 2 lab:- 1 Reference Text: ALISON BLENKINSOPP, PAUL PAXTON(eds), Symptoms in the Pharmacy. A Guide to the Management of Common Illness, 6th edition. Lor waterfield, Community Pharmacy Hand Book, 5th edition</p> | | |
| | Introduction to community pharmacy. | 1 |



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| Clinical Pharmacy1 | Respiratory problems: Cough, Common cold, allergic rhinitis, Otitis media, Laryngitis & Pharyngitis | 3 |
| | G.I.T problemse: Diarrhea, Constipation, Heart burn and indigestion, IBS and Hemorrhoids | 4 |
| | Pediatric care practice : Oral thrush, pinworms and head lice | 2 |
| | Skin conditions: Acne, Scabies, Psoriasis, Hair loss, Fungal infection, Eczema and Dermatitis , Dandruff, Cold sore, Corns and Callus. | 5 |
| | Women’s health care: Cystitis and vaginal thrush, primary dysmenorrhea and Premenstrual syndrome. | 2 |
| | CNS related problems: Headache, Insomnia, Motion sickness, Nausea and vomiting | 3 |
| | - Eye problems | 1 |
| | ENT problems | 1 |
| | Oral hygiene, mouth ulcer | 1 |
| | Obesity and body weight control. | 1 |
| | - Pain and musculoskeletal disorders | 1 |
| | Nicotine replacement therapy (NRT). | 1 |
| | Dietary supplements | 1 |
| | An update in reclassification of OTC drugs (simvastatin, Tamsulosin & azithromycin). | 2 |
| | Medication adherence and errors. | 1 |
| <p>Title of the course: Biopharmaceutics Course number: 414 Level: 4th Class, 1st Semester Credit hours/week : Theory 2 Laboratory 1 Reference text: Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics.</p> <p>Objectives: The coarse deals with the physical and chemical properties of drug substance, dosage form and the biological effectiveness of the drug or drug product upon administration, including drug availability in the human or animal body from a given dosage form. The pharmacokinetic part of the coarse deals with the time-coarse of the drug in the biological system, and quantification of drug concentration pattern in normal subjects and in certain disease states.</p> | | |
| Biopharmaceutics | Introduction to biopharmaceutics. | 2 |
| | Biopharmaceutic aspects of products; drug absorption; mechanisms of absorption; physicochemical factors; dissolution rate; effects of excipients; type of dosage forms. | 6 |
| | One compartment open model. | 2 |



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| | Multicompartment models. | 2 |
| | Pharmacokinetics of drug absorption. | 2 |
| | Bioavailability and bioequivalence. | 2 |
| | Clearance of drugs from the biological systems. | 2 |
| | Hepatic elimination of drugs. | 2 |
| | Protein binding of drugs. | 2 |
| | Intravenous infusion | 2 |
| | Multiple dosage regimens. | 2 |
| | Non-linear pharmacokinetics. | 2 |
| | Dosage adjustment in renal diseases. | 2 |
| <p>Title of the course: Public Health Course number: 415 Level: 4th Class, 1st Semester Credit hours/week : Theory 2 Reference text: <i>Lucas AO, Gilles HM, (Eds), Short Textbook of Public Health Medicine for the Tropic, (4th Ed), 2003.</i> Objectives: This course enables the students to understand the principles of public health and the art of preventing disease, promoting health and prolonging life, through organized effort of society.</p> | | |
| | Introduction: The scope and concerns of public health, health care system in Iraq | 1 |
| | Measuring, Monitoring, and Evaluating the Health of a Population | 1 |
| | Population screening and public health | 1 |
| | Prevention and control of non-communicable diseases | 1 |
| | Principles of infectious disease control | 1 |
| | National immunization plan of Iraq. | 1 |



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| Public Health | Communicable diseases (infections through the gastro-intestinal tract, Infections through skin and mucous membranes, Infections through the respiratory tract) | 1 |
| | Prevention and control of public health hazards (Tobacco, alcohol, Public health aspects of illicit psychoactive drug use) | 1 |
| | Major health problems (Obesity, Physical activity and health, Public mental health and suicide, Dental public health, Sexually transmitted infections, Chronic hepatitis and other liver disease, Tuberculosis) | 2 |
| | Nutritional disorders | 1 |
| | Family health | 1 |
| | Environmental health | 1 |
| | Occupational health | 1 |
| | Travel health | 1 |
| | Introduction: a historic background of pharmacy practice. | 1 |
| | Pharmacy Practice and the health care system | 2 |
| | Health promotion in community pharmacy | 1 |
| | Introduction to Pharmaceutical care | 1 |
| | Pharmaceutical care planning | 2 |
| | Community pharmacy management | 1 |
| | Hospital pharmacy service. | 1 |
| | Biosafety in pharmacy practice | 2 |
| | Formulary management and Regulatory affairs | 2 |
| | Rational Use of Drugs | 2 |
| English language | | |



| 2 nd semester | Lecture title | hours |
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| <p>Title of the course: Communication Skills Course number: 215 Level: 4th Class, 2st Semester Credit hours: Theory 2</p> <p>Reference text: 1-Robert S. Beardsley, (ed.); Communication Skills in Pharmacy Practice.</p> <p>Objectives: Communication skill is one of the missions of pharmacy care practice, aims to develop a conventional relationship between pharmacist and patients, in which information is exchanged, hold in confidence and used to optimize patient care through appropriate drug therapy. This course is intended to pharmacist provide better care to patients, and focus on communication skills necessary to</p> | | |
| Communication Skills | Principles and Elements of Interpersonal Communication | 2 |
| | Nonverbal type of communication. | 2 |
| | Barriers to communication. | 2 |
| | Listening and empathic responding during communication. | 2 |
| | Assertiveness. | 2 |
| | Interviewing and assessment. | 2 |
| | Helping patients to manage therapeutic regimens. | 2 |
| | Patient counseling; counseling check list; point-by-point discussion; counseling scenario. | 2 |
| | Medication safety and communication skills. | 2 |
| | Strategies to meet specific needs. | 2 |
| | Communicating with children and elderly about medications. | 2 |
| | Communication skills and inter-professional collaboration. | 2 |
| | Electronic communication in healthcare. | 2 |
| | Ethical behavior when communicating with patients. | 2 |



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| | Travel health | 1 |
| | Health insurance | 1 |
| Department of Pharmacology and Toxicology | | |
| Title of the course: Pharmacology III Course number: 426 | | |
| Level: 4 th Class, 2 nd Semester | | |
| Credit hours/week: Theory 2 hours | | |
| Reference text: Lipincott Pharmacology 3rd Edition, 2006 | | |
| Objectives: To introduce the pharmacy students to various drug groups affecting endocrine systems and their use in correcting abnormalities in the endocrine functions. Moreover the course will cover the drugs used in the management of neoplastic diseases, bone disorders, obesity and erectile dysfunction. Inflammatory agents and the anti-inflammatory drugs will also be covered during this course. | | |
| Pharmacology III | Hormones of the pituitary and thyroid glands. | 3 |
| | Insulin and oral hypoglycemic drugs. | 4 |
| | Adreno-corticosteroids. | 3 |
| | The gonadal hormones and inhibitors. | 3 |
| | Autacoids and autacoid antagonists | 3 |
| | Non-steroidal anti-inflammatory drugs (NSAIDs) and other anti-inflammatory agents. | 3 |
| | Drugs used in erectile dysfunction. | 2 |
| | Drugs used in osteoporosis. | 2 |
| | Drugs used in the management of obesity. | 2 |
| | Cancer Chemotherapy: Anticancer drugs and immunosuppressants. | 5 |



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| <p>Title of the course: Organic Pharmaceutical Chemistry III Course number: 427 Level: 4th Class, 2nd Semester Credit hours/week : Theory 3 Laboratory 1 Reference text: Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceutical Chemistry; Delgado JN, Remers WA, (Eds.); 10th ed., 2004.</p> | | |
| Organic Pharmaceutical Chemistry III | β-Lactam antibiotics (Penicillins); β-Lactamase inhibitors; Cephalosporins and Monobactams. | 9 |
| | Aminoglycosides and Chloramphenicol; Tetracyclines; Macrolides; Lincomycins and Polypeptides; Antiviral agents (properties of viruses, viral classification, products). | 9 |
| | Sulfonamides (chemistry, nomenclature, mechanism of action, resistance, toxicity, side effects, metabolism, protein binding, distribution and SAR); products; Sulfones. | 4 |
| | Anti-neoplastic agents: Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds. | 17 |
| | Hormones and related compounds; Future anti-neoplastic agents; Monoclonal antibodies; Gene therapy of cancer. | 6 |
| <p>Title of the course: Clinical Pharmacy II Level: 4th Class, 2nd Semester hours/week : Theory 2 hours Lab 1 Reference Text: Roger Walker, Clive Edwards (eds), Clinical Pharmacy & Therapeutics</p> | | |
| Clinical Pharmacy II | Introduction to the concept of clinical pharmacy- its activities and professional responsibilities.(including current state of clinical pharmacy in Iraq) . | 1 |
| | overview of pharmaceutical care practice (the patient care process). | 1 |
| | Hematologic disorders: Anemia and sickle cell disease. | 2 |
| | Hypertension. | 2 |
| | Ischemic heart diseases | 2 |
| | Heart failure. | 2 |
| | Peripheral vascular diseases. | 1 |
| | - Asthma. | 2 |
| | Chronic obstructive pulmonary disease (COPD). | 1 |
| | Diabetes mellitus & Diabetic ketoacidosis (DKA) . | 2 |
| | Peptic ulcer disease. | 2 |
| | Tuberculosis | 1 |



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| | Infective meningitis | 1 |
| | Respiratory tract infections | 2 |
| | GIT infections | 1 |
| | Gout and hyperuricemia | 1 |
| | Rheumatoid arthritis (RA) and osteoarthritis (OA) | 2 |
| | Osteoporosis and other metabolic bone disease. | 1 |
| | Infectious Endocarditis | 1 |
| | Surgical antibiotic prophylaxis | 1 |
| | Urinary tract infection (UTI) | 1 |
| <p>Title of the course: General Toxicology Course number: 429 Level: 4th Class, 2nd Semester Credit hours/week : Theory 2 Laboratory 1 Reference text: Casarett and Doull, Toxicology, the Basic Science of Poisons; latest edition. Objectives: To study the principle of exposure to different chemicals and environmental factors, their sources, mechanisms of toxicity and their risk to human being; it enables students to understand the required measures to protect living organisms against the suspected toxic hazards.</p> | | |
| General Toxicology | Introduction: general consideration; host factor, environmental factors of toxic effects. | 3 |
| | Carcinogenesis. | 3 |
| | Mutagenesis: | 1 |
| | Target organs and systemic toxicology; Respiratory system, Liver, Kidney, Skin, Nervous system, cardiovascular system, Blood. | 16 |
| | Toxic substances: Food additive and contaminants, Pesticides, Metals, Radiation and radio active materials, plants, Solvents, | 15 |
| | Environmental toxicology: Air pollution, water and soil pollutants, Gases (Tear gas, Pepper spray), CO, Cyanide(H ₂ S). | 7 |



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| <p>Title of the course: Industrial Pharmacy I Course number: 4210 Level: 4th Class, 2nd Semester Credit hours/week : Theory 3 Laboratory 1 Reference text: <i>The Theory and Practice of Industrial Pharmacy by Leon Lachman et al.</i> Objectives: The subject aim to teach pharmacy students the steps and lines upon which the preformulation processing of pharmaceutical dosage forms. This fundamental coarse provide the required principles to integrate knowledge of Pharmaceutical Technology in preformulation of perfect dosage form. It includes milling, mixing, drying and filtration, besides sterilization to achieve a proper processing of dosage forms.</p> | | |
| Industrial Pharmacy I | Principles of pharmaceutical processing; mixing; fluid mixing; flow characteristics; mechanisms of mixing; mixing equipments; batch and continuous mixing; mixer selection; solid mixing theory and particulate solid variables; forces and mechanisms. | 7 |
| | Milling; pharmaceutical application; size measurement methods; Theory and energy of comminution; types of mills; factors influencing milling; selection of mill techniques; specialized drying methods. | 7 |
| | Drying: definition; purpose; humidity measurement; theory of drying; drying of solids, and classification of dryer; specialized drying methods. | 7 |
| | Clarification and filtration: Theory; filter media; filter aids; selection of drying method; non-sterile and sterile operations; integrity testing; equipments and systems (commercial and laboratory). | 7 |
| | Sterilization; validation of methods; microbial death kinetics; Methods of sterilization (thermal and non-thermal); mechanisms; evaluation. | 7 |
| | Pharmaceutical dosage form design; pre-formulation; preliminary evaluation; bulk characterization; solubility and stability analysis. | 3 |
| | Pharmaceutical dosage forms; sterile products; development; formulation; production; processing; quality control. | 7 |

**Baghdad College of medical sciences / department of Pharmacy
Syllabus**



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| English language | | |
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