University of Al-Ayen - College of Pharmacy

Fifth-stage

1st semester	Lecture title	hours
Title of the course: *Organic Pharmaceutical Chemistry* IV Course number: 511 **Level: 5th Class, 1st Semester** **Credit hours/week : Theory 2** **Reference text: *Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceutical Chemistry; Delgado JN, Remers WA, (Eds.); 10th ed., 2004.*** **Objectives: To give the student knowledge and experience in pro-drug and hormones as partof their medicinal and pharmaceutical field. It includes classification, synthesis, biotransformation and/or formulation of certain drugs to improve their action as well as to avoid some side effect.**		
Organic Pharmaceutical Chemistry IV	Basic concept of prodrugs; Covalent bonds (cleavable); Prodrugs of functional groups; Types of prodrugs.	6
	Chemical delivery systems; Polymeric prodrugs; Types and structure of polymers; Cross-linking reagents.	6
	Drug targeting.	4
	Project.	4
	Combinatorial chemistry; Peptides and other linear structures; Drug like molecules; Support and linker; Solution-phase combinatorial chemistry.	5
	Detection, purification and analgesics; Encoding combinatorial libraries; High-throughput screening; Virtual screening; Chemical diversity and library design.	5

Title of the course: ***Industrial Pharmacy*** **II Course number: 512**

Level: 5th Class, 1st Semester

Credit hours/week: Theory 3 Laboratory 1

Reference text: ***The Theory and Practice of Industrial Pharmacy by Leon Lachman et al.***

Objectives: The coarse enable technical setup for coordination of standards for formulation of typicaldosage forms and the principles needed to learn mass production of different pharmaceutical dosage forms. The syllabus includes different dosage forms like tablets, capsules, aerosols, emulsion, etc, besides the advanced techniques like enteric coating and micro-encapsulation.

Industrial Pharmacy II	Pharmaceutical dosage forms: Tablets; role in therapy; advantages And disadvantages; formulation; properties; evaluation; machines used in tableting; quality control; problems; granulation, and methods of production; excipients, and types of tablets.	**10**
	Tablet coating; principles; properties; equipments; processing; types Of coating (sugar and film); quality control, and problems.	**4**
	Capsules: Hard gelatin capsules; materials; production; filling equipments; formulation; special techniques.	**3**
	Soft gelatin capsules: Manufacturing methods; nature of capsule shell and content; processing and control; stability.	**2**
	Micro-encapsulation; core and coating materials; stability; equipments and methodology.	**2**
	Modified (sustained release) dosage forms; theory and concepts; evaluation and testing; formulation.	**3**
	Liquids: Formulation; stability and equipments.	**3**
	Suspensions: Theory; formulation and evaluation.	**3**
	Emulsions: Theory and application; types; formulation; equipments And quality control.	**3**
	Semisolids: Percutaneouse absorption; formulation; types of bases (vehicles) preservation; processing and evaluation.	**3**

	Suppositories: Rectal absorption; uses of suppositories; types of bases; manufacturing processes; problems and evaluation.	3
	Pharmaceutical aerosols: Propellants; containers; formulation; types And selection of components; stability; manufacturing; quality control and testing.	6
Title of the course: *Clinical Chemistry* Course number: 514 **Level: 5th Class, 1st Semester** **Credit hours/week : Theory 3 Laboratory 1** **Reference text: *1- Clinical Chemistry & Metabolic Medicine, Crook, 2006. 2- Clinical Chemistry, Kaplan, 2003.*** **Objectives: To exhibit knowledge of human body chemistry levels under healthy and abnormal conditions. At the end of the semester the students should be familiar with the basicand advanced information in clinical laboratory chemistry and how it relates to patient health and care**		
Clinical chemistry	Disorders of Carbohydrates metabolism, Hyperglycemia & Diabetesmellitus, Hypoglycemia.	3
	Disorders of lipid metabolism.	2
	Liver Function Tests.	4
	Kidney Function Tests.	4
	Diagnostic enzymology.	4
	Hypothalamus & pituitary endocrinology, disorders of anteriorpituitary hormones, disorders of adrenal gland, hypopituitrism.	8
	Reproductive system, disorders of gonadal function in males &females, biochemical assessment during pregnancy.	5
	Tumor markers.	4
	Drug interaction with laboratory Tests.	2
	Disorders of calcium metabolism	3
	Acid- Base Disorders.	4

Title of the course: *Clinical Toxicology* Course number: 516 **Level: 5th Class, 1st Semester** **Credit hours/week : Theory 2 Laboratory 1** **Reference text: *1- Gossel TA, Bricker TD, (Eds.); Principles of Clinical Toxicology; latest edition. 2-Viccellio P, (Ed.); Handbook of Medicinal Toxicology; latest edition.*** **<u>Objectives</u>: The course aims to provide students with the principles and skills required to deal with the toxicity of chemicals and drugs in clinical settings; it enables students to correlate signs and symptoms of toxicity with the analytical data, and to know how to establish preventive and therapeutic measures for poisoning cases.**		
Clinical Toxicology	Initial Evaluation and Management of the Poisoned Patient. Including pediatric poisoning and special consideration in the geriatric patient	**3**
	Drug Toxicity: Over the counter drugs; caffeine; theophylline; antihistamine and decongestant; non-steroidal anti-inflammatory drugs; vitamins.	**3**
	Prescription Medications: Cardiovascular drugs; beta blockers; ACE inhibitors; Digoxin; Calcium channel blocker; Antiarrhythmic agents; hypoglycemic drugs; Opiods; CNS depressants; tricyclic antidepressants; anti-cholinergic phenothiazines; CNS stimulant.	**13**
	Drug of Abuse: Opioids; Cocaine; phencyclidine; marijuana; Lysergic acid.	**4**
	Chemical and Environmental Toxins: Hydrocarbones; Household toxins; Antiseptic; Disinfectants; Camphor; moth repellents.	**3**
	Botanicals and plants-derived toxins: Herbal preparation; Toxic plants; Poisonous mushrooms.	**4**

College of Pharmacy **Department of Clinical Laboratory Sciences** **Title of the course: Clinical Laboratory Training Course number: 515** **Level: 5th Class, 1st Semester** **Credit hours/week: 2** **Objectives: It provides general information about the biochemical basis of disease and about the principles of laboratory diagnosis; it supplies specific guidance on the clinical value of chemical investigations, indicating their range of application and limitations as well as relating results of laboratory tests to the process of clinical diagnosis and management as these might applied to individual patients.**		
Clinical Laboratory Training	Diagnostic test basics, collecting &transporting specimens, venipuncture, urine specimen, stool specimen.	**4**
	Biochemical tests: Fasting blood glucose, Post-prandial glucose, Oral glucose tolerance test.	**4**
	Blood urea, Blood creatinine, Creatinine clearance, Uric acid.	**4**
	Cholesterol, Lipoproteins, triglycerides.	**4**
	Blood proteins, Bilirubin.	**4**
	Calcium, Inorganic phosphate, Serum chloride	**4**
	Alkaline phosphatase, Acid phosphatase, Alanine amiotransferase, Aspartate aminotransferase, Lactate dehydrogenase, Creatine phosphokinase.	**4**
	Serological tests: VDRL, ASO- Titer, Hepatitis tests.	**4**
	C-reactive protein test, Rheumatic factor test, Rosebengal test, Typhoid fever test(Widal test), Pregnancy Test.	**4**
	General urine examination, urine specimen collection.	**4**
	Hematological tests: RBC count, Hb, PCV, RBC indices, WBC count, Platelets count.	**4**

	Blood typing, Coombs test, Bleeding time, ESR.	4
	Microbiological tests: culture and sensitivity tests, Staining methods	4
	Culture media, Enriched culture media for general use	4
	Tests for identification of bacteria, Disk diffusion tests of sensitivity to antibiotics, Choice of drugs for disk test, bacterial disease and their laboratory diagnosis.	4

Title of the course: Therapeutic Drug Monitoring (TDM)Course number: 529

Level: 5th Class: 2nd Semester

Credit hours/week: Theory 2 , Laboratory 1

Reference Texts:

Applied Clinical Pharmacokinetics, Second Edition, 2008 byLarry A. Bauer.

Additional references include but not limited to the following: **Clinical Pharmacokinetics Concepts and Applications**, Third Edition, 1995 by Malcolm Rowland and Thomas Tozer;

Therapeutic I	Interpretation of Lab. data.	2
	Acute coronary syndrome.	2
	Arrhythmias	2
	Thrombosis	2
	Dyslipidemia	1
	Stroke	2
	Shock	2
	Liver cirrhosis	2
	Viral hepatitis	1
	Inflammatory bowel diseases	2
	Acute renal failure (ARF)	1
	Chronic renal failure (CRF)	2
	Hemodialysis and peritoneal dialysis	1
	Systemic lupus erythematosis (SLE)	1
	Benign prostatic hyperplasia (BPH)	1
	Acid – base disorders	2
	Disorders of fluid and electrolytes	2
	Urinary incontinence and pediatric enuresis	1

	Epilepsy and status epilepticus	2
	multiple sclerosis	1
	Parkinson's disease	2
	Pain management	2
	Headache disorders	1
	glucoma	2
	Parenteral nutrition	2
	Enteral nutrition	2
	Pharmacovigilance	2