3rd stage ; 2nd Semster المرحلة الثالثة: الفصل الدراسي الثاني

Title of the course: Organic Pharmaceutical Chemistry I

Level: 3rd Class, 2nd Semester
Credit hours/week: **Theory 3 hours Practical 2 (4 credit units)**
Reference text: *Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 10th ed, 2004.*
Objectives: To enable students to understand mechanisms of drug action at molecular level; the role of medicinal chemistry in the discovery and development of synthetic and structure- therapeutic agents. It also enables students to understand the concept of new compounds activity relationship and its application in design and synthesis of derivatives.

Organic Pharmaceutical Chemistry I

- Drug distribution. 4
- Acid- base properties. 3
- Statistical prediction of pharmacological activity. 3
- QSAR models. 2
- Molecular modeling (Computer aided drug design). 1
- Drug receptor interaction: force involved. 1
- Steric features of drugs. 2
- Optical isomerism and biological activity. 1
- Calculated conformation. 1
- Three- dimensional quantitative structure activity relationships and databases.1
- Isosterism. 1
- Drug-receptor interaction and subsequent events. 1
- General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P450 mono-oxygenases in oxidative biotransformation; Oxidative reactions; Reductive reactions; Hydrolytic reactions; Phase II reactions. 22
- Factors affecting drug metabolism. 2

Title of the course: Pharmacology I

Level: 3rd Class, 2nd Semester
Credit hours/week: Theory 3
Reference text: *Lipincott Pharmacology 3rd Edition, Latest edition*
Objectives: To introduce pharmacy students to the basis of general pharmacology.
The student will learn about various body systems and drugs used to affect them in health and disease. Moreover the course will cover the drugs used to treat microbial infections.

Pharmacology I

- General introduction to Pharmacology. 2
- Pharmacokinetics. 4
- Drug Receptor interaction and Pharmacodynamics.4
- The autonomic nervous system (ANS).
- Cholinergic system. 6
- Adrenergic system. 6

- Principal of antimicrobial therapy. 2
- β- lactam and other cell wall synthesis inhibitor antibiotics 4
- Protien synthesis inhibitors 4
- Quinolones, Folate antagonists, and urinary tract antiseptics. 3
- Antimycobacterium drugs 2
- Antifungal drugs. 2
- Antiprotozoal drugs. 1
- Anthelmintic drugs. 2
- Antiviral drugs. 1

Title of the course: Pharmaceutical Technology II

Level: 3rd Class, 2nd Semester
Credit hours/week: **Theory 3 Practical 2 (4 credit units)**
Reference text: *Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition.* and *Sprowel's American Pharmacy*.
Objectives: To teach theoretical bases for the technology of preparing different dosage forms with respect to their raw materials, compositions, methods of preparation, stability, storage and uses; in addition to define and characterize the possible incompatibilities that may occur in dosage forms.

Pharmaceutical Technology II

- Emulsions; purpose of emulsification; methods of emulsification; emulsifying agents; HLB system; stability of emulsions.10
- Lotions; liniments and collodions. 5
- Suppositories. 6
- Powdered dosage forms. 10
- Semisolid dosage forms. 10
- Incompatibilities in pharmaceutical dosage forms. 4

Title of the course: Biochemistry II

Level: 3rd Class, 2nd Semester
Credit hours/week: **Theory 3 Practical 2**
Reference text: *Harper's Illustrated Biochemistry, Twenty-Sixth Edition*
Objectives: To provide a curriculum of basic biochemistry and molecular biology. At the end of this course, students should be able to understand the main metabolic processes occurring in the living cell.

Biochemistry II

- Bioenergetics. 2
- Biologic oxidation. 2
- The respiratory chain and oxidative phosphorylation. 2
- Over view of metabolism. 2
- Citric acid Cycle. 2
- Glycolysis. 2
- Metabolism of glycogen. 4
- Gluconeogenesis. 3
- Pentose phosphate pathway and other pathways of hexose metabolism. 3
- Biosynthesis of fatty acids. 3

- Oxidation of fatty acids. 2
- Metabolism of acylglycerol and sphingolipids. 2
- Lipid transport and storage. 2
- Cholesterol synthesis, transport, and excretion. 2
- Biosynthesis of the Nutritionally Nonessential Amino Acids. 3
- Catabolism of Proteins & of Amino Acid Nitrogen 3
- Catabolism of the Carbon Skeletons of Amino Acids. 2
- Conversion of Amino Acids to Specialized Products. 2
- Porphyrins & Bile Pigments 2

Title of the course: Pharmacognosy III

Level: 3rd Class, 2nd Semester
Credit hours/week: **Theory 2 Practical 2**
Reference text: *Robbers JE, Speedie MK, Tyler VE (Eds.); Pharmacognosy and Pharmacobiotechnology; the latest edition.*
Michael Heinrich, Joanne Barnes; Fundamentals of Pharmacognosy & Phytotherapy.
Objectives: This course is intended to study the chemistry of other natural products namely alkaloids and antibiotics. It also includes studying phytotherapy & tissue culture techniques utilized for production of natural products.

Pharmacognosy III

- Alkaloids: Introduction; Physical and chemical properties; pyridine,
- piperidine alkaloids; tropane alkaloids.5
- Alkaloids: Quinoline tropan alkaloids; iso-quinoline alkaloids;
- imidazole alkaloids; indole alkaloids. 5
- Alkaloids: Steroidal alkaloids; lupinane alkaloids; alkaloidal amines;
- purine alkaloids. 4
- Antibiotics: Natural sources; biosynthetic pathways, isolation and purification. 6
- Phytotherapy: Introduction, principles, medicinal plants in selected
- health care systems. Important natural products & phytomedicines used
- in pharmacy & medicine. 10

Title of the course: Pharmacy ethics

Level: 3rd Class, 2nd Semester
Credit hours/week: **Theory 1**
Reference texts:
1– *Ruth Rodgers, (ed.); fast track: Law and Ethics in Pharmacy Practice. Pharmaceutical Press 2010.*
2-*Joy Wingfield and David Badcott . Pharmacy Ethics and Decision Making. Pharmaceutical Press2007*
3-*Robert J. Cipolle, Linda M. Strand, Peter C. Morley. Pharmaceutical Care Practice: The Clinician's Guide, 2nd Edition.*
4– *Robert m. Veatch and Amy Haddad. Case Studies in Pharmacy Ethics. second edition.Copyright © 2008 by Oxford University Press, Inc.*
Objectives:

The course will provide an overview of ethical issues facing practicing pharmacists in order to enable the student to understand the basic concepts of ethics which formulate the relationship of pharmacist with the patient, colleges, and other health personnel in order to deliver his pharmaceutical services in good way.

The course will begin with an introduction to ethics in pharmaceutical practice and then proceed to examine in depth specific topics (Beneficence, Autonomy, Confidentiality, Consent…). The course will include lectures, case analysis, and classroom discussion.

Pharmacy Ethics

- Introduction to Pharmacy Ethics (Theoretical considerations). 2
- Code of Ethics for Pharmacists. 1
- Common Ethical Considerations in Pharmaceutical Care Practice (Beneficence, Autonomy, Honesty, Informed Consent, Confidentiality, Fidelity ……). 3
- Inter-professional Relations. 2
- Making ethical decisions. 1
- Ethical issues related to clinical pharmacy research. 1
- Ethical problems in the pharmacist's clinical practice. 1
- Preventing misuse of medicines. 1
- Case studies in pharmacy ethics. 3