Philadelphia University
Faculty of Pharmacy
Department of Pharmaceutical Science
Second Semester, 2017/2018

Course Syllabus

Course Title: Pharmaceutical Medicinal Chemistry 1	**Course code: 0510311**
Course Level: 3rd level	**Course prerequisite (s) and/or corequisite (s): Phramacognosy and Phytochemistry (0510217)**
Lecture Time:	**Credit hours: 2 hours**

		Academic Staff Specifics			
		Rank	Office Number and Location	Office Hours	E-mail Address
Lecturer	Dr. Abd El-Naseer Dokkah	Assistant Professor	Pharmacy Building 511		adokka@philadelphia.edu.jo
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Course module description:

The first part of the subject deals with many aspects related to the molecular properties of the drug that have great impact on both the pharmacokinetic and pharmacodynamic properties of drug molecules. This includes the physicochemical properties covering the lipophilicity, water solubility, acidity and basicity, dissociation constant, chemical and biological stability. The second part concerns about the different metabolic transformation the drug will undergo inside the body, these reactions will affect the absorption, distribution, excretion, toxicity, duration of action and effectiveness of drugs. The third part of this subject will study some drug groups such as those acting on cholinergic, adrenergic and histaminic receptors from many aspects such as the structural activity relationships, the possible structural modifications and the mechanism of actions.

Course module objectives:

Student will be able to have full knowledge about the drug groups to be studied, including their metabolism in the body, the possible mechanism of action, the relationship between their chemical structure and the pharmacological activity as well as the toxicity and the factors affecting the pharmacokinetic and pharmacodynamic properties of the drug molecule. Also the student will be able to expect some molecular properties of drugs that affect almost all drug aspects inside the body. Student at the end of the course will have the ability to analyze and investigate the effect of structural modification of a given drug on the pharmacological activity as well as the possible toxicity.

Teaching methods:

Lectures as power point presentations, seminars and discussion groups

Learning outcomes

At the end of the course, the student should acquire

A. Knowledge and understanding
   a. Understand the concept of Pharmaceutical Medicinal Chemistry;
   b. Study the important drug properties and their effect on drug effect and toxicity.
   c. Describe the logical structural modifications of drugs to alter their Pharmacodynamic including toxicity and pharmacokinetics
   d. Explain how structural modification on drug might strongly affect their role inside the body
   e. Understand the concept of drug Metabolism and its effect on drug absorption, distribution, excretion and drug target interactions.

B. Cognitive Skills
   a. Gain insight into the concepts of medicinal chemistry and drugs' structure-activity relationship.
   b. Demonstrate how structural modifications of drugs can be used to alter their Pharmacodynamic and Pharmacokinetics.
   c. Explain the role chemical structure of drug on their journey in the body
   d. Figure out the level of ionization of drugs and its impact on drug target interactions

C. Communication Skills
   a. Access resources to gain information related to drugs SAR, Pharmacodynamic and pharmacokinetics in both printed and electronic formats to practice and develop life-long self-directed learning.
   b. Work within groups to study examples of available drugs in the market; their chemical structure, pharmacokinetic and dynamics, drug metabolism, their pharmacological effects and any possible modification to improve activity and minimize side effects

D. Transferable Skills
   a. Demonstrate effective written and oral communication skills, especially the ability to transmit complex technical information in a clear and concise manner.
   b. Demonstrate ability to search and use the literature in both printed and electronic formats as well as and develop the habit of life-long self-directed learning.

Assessment instruments:

- Short reports and/ or presentations, and/ or Short research projects.
- Quizzes.
- Home works.
- Final examination.

Allocation of Marks	
Assessment Instruments	**Mark**
First examination	**20**
Second examination	**20**
Reports, research projects, Quizzes, Home works, Projects	**20**
Final examination: 50 marks	**40**
Total	**100**

Documentation and academic honesty

- Documentation style (with illustrative examples)
- Protection by copyright
- Avoiding plagiarism.

Course/ module components

- **Books (title , author (s), publisher, year of publication)**

1- An introduction to Medicinal Chemistry by Graham L. Patrick. Fourth edition, Oxford, 2009
2- Wilson and Gisvolds text book of organic medicinal and pharmaceutical chemistry by John H. Black and John M. Beale, jr. Eleventh edition, Lippincott Williams and Wilkings 2004.

3- Foyes principle of medicinal chemistry by David H. Williams, Thomas L. Leuke, Williams O. Foye. Lippincot William and Wilkins. Fifth edition, 2002, ISBN.

Course/module academic calendar

week	Basic and support material to be covered
(1-3)	Introduction to medicinal chemistry (I) The molecular properties of drugs • Pharmacokinetic and pharmacodynamic properties
(4)	Lipophilicity of drugs
(5-7)	The molecular properties of drugs • Acidity and basicity of drugs • Route of administration
First examination	
(8,9)	Drug metabolism • Introduction • Phase-I metabolism
(10)	Drug metabolism • Phase-II metabolism
(11)	Factors affecting drug metabolism
Second examination	
(12,13)	Drugs acting on cholinergic receptors
(14,15)	Drugs acting on adrenergic receptors
(16)	Drugs acting on histaminic receptors
Final examination	

Expected workload:

On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

Attendance policy:

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.