



JERASH UNIVERSITY
FACULTY OF PHARMACY
DEPARTMENT OF PHARMACEUTICAL SCIENCE

Course Title: Medicinal chemistry (III)	Course code: 1101411
Course Level:	Course prerequisite (s) and/or co requisite (s):
Lecture Time : 1.5 hr	Credit hours: 3 hours

Academic Staff Specifics

Name	Rank	Office Number and Location	Office Hours	E-mail Address & Website
Dr. Mohammed Nooraldeen Al-Qattan	Assist Prof	406 Pharmacy building		https://sites.google.com/view/alqattan/

1 Course module description:

The course applies principles of medicinal chemistry in understanding compounds used as anticancer agents including: drugs acting on nucleic acids, enzymes, hormonal receptors, structural proteins and others. The second part of the course deals with antihypertensive agents including, beta-blockers, calcium channel blockers, and diuretics. The final part of the course covers steroidal hormones. In each heading, the topic covered include chemical structures, nomenclature, physicochemical properties, drug target, mechanism of action, structure-activity relationships, metabolism and possible problems like side effects, formulation, stability and pharmacokinetic problems.

2 Course objectives

After completion of medicinal chemistry-III course, the student will be able to understand the relationship between structure and activity, metabolism, toxicity, and other pharmacokinetic parameters regarding anticancer, antihypertensive agents, and steroidal hormones. Consequently, the student will be able to correlate between different observations in pharmacology, such effects and side effects for particular drug or different doses, frequencies and duration of actions of drug analogues..

3 Course/ module components

The reference textbooks are arranged by relevance

- Patrick, Graham L. An introduction to medicinal chemistry. Oxford university press, 2013.
- Wilson, Charles Owens, John Marlowe Beale, and John H. Block. Wilson and Gisvold's textbook of organic medicinal and pharmaceutical chemistry. Lippincott Williams & Wilkins,, 2011.

- Foye, William O. *Foye's principles of medicinal chemistry*. Lippincott Williams & Wilkins, 2013.
- Nogrady, Thomas, and Donald F. Weaver. *Medicinal chemistry: a molecular and biochemical approach*. Oxford University Press, 2005.
- Davis, Andrew, and Simon E. Ward, eds. *The handbook of medicinal chemistry: principles and practice*. Royal Society of Chemistry, 2014.

4 Teaching methods:

Lectures, on-board sketches, tutorials and problem solving.

5 Learning outcome

By the end of this course, students will acquire:

5.1 Knowledge

- Have knowledge about anticancer agents, anti-hypertensive drugs, and steroidal hormones regarding structures, drug targets, mechanisms of actions, structure-activity relationship, metabolism, toxicity and side effects.

5.2 Cognitive skills (*Thinking and analysis*).

Relates structures to receptor interaction, stability, physicochemical and pharmacokinetic properties. Thus, the student is able to modify drug molecules for intentional benefits.

5.3 Communication skills (*personal and academic*):

The student can explain differences in activities, doses, pharmacokinetics among anticancer agents (or anti-hypertensive and steroidal hormones) at molecular level to other healthcare professionals or patient. The course also promotes the ability to read and understand published articles related to the topics.

5.4 Practical and subject specific skills (*Transferable Skills*).

The course helps the student to comprehend the relation-ship between structure and activities in order to understand pharmacology and relation-ship between structure and pharmacokinetic properties in order to understand pharmaceuticals.

6 Assessment instruments

Assessment method	Mark
First examination	20
Second examination	20
Final examination	40
Quizzes, reports, classroom questions	20
Total	100

Make up exam will be afford for valid reasons only with consent of dean. Make-up exam may be different from regular exam in content and format.

7 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.

8 Documentation and academic honesty

Taking headlines/notes from the text book with further elaborated/detailed discussion during the lecture with avoidance of plagiarism. The citation is provided wherever it is required.

9 Course/module academic calendar

Week	Basic and support material to be covered	Homework/reports and their due dates
(1,2)	Introduction to anticancer agents	
(3,4)	1. Drugs acting on DNA: Intercalating agents, Alkylating agents	
(5,6)	2. Antimetabolites:	
(7,8)	3. Hormone-based therapies 4. Tubulin polymerization inhibitors	
(8)	1 st . Exam	
(9,10)	5. Signaling pathways inhibitors	
(11)	Introduction to Antihypertensive agents, adrenergic blockers	
(12,13)	Adrenergic blockers and other centrally acting agents Angiotensin converting enzyme inhibitors	
(13)	2 nd Exam	
(14)	Calcium channel blockers	
(15)	Diuretics	
(16)	Final Exam	

The in-between brackets include the reference textbook as abbreviation and pages numbers ranges. Abbreviations include: MC for McMurry and the other for Hart.